FILE: 2022/2563

DEPARTMENT OF BIODIVERSITY, CONSERVATION AND ATTRACTIONS REPORT

PROPOSAL	Installation of lighting towers at Applecross Tennis Club
LOCATION	Lot 264 on Plan 1751 The Strand, Applecross
COST	$282,000
APPLICANT	Applecross Tennis Club Inc.
LANDOWNER	City of Melville with lease to Applecross Tennis Club
LOCAL GOVERNMENT	City of Melville
MRS CLASSIFICATION	Parks and Recreation Reserve
DECISION TYPE	Part 5, *Swan and Canning Rivers Management Act 2006*, Ministerial Determination
ATTACHMENTS	1A External referral responses: - City of Melville (29 pages) - Department of Water and Environmental Regulation (11 pages) 1B Tennis West letter of support (1 page) 1C Summary of public submissions (5 pages) 1D Summary of public submissions on the draft report (4 pages) 1E Lighting design information (Musco) (35 pages) 1F Environmental noise assessment (EcoAcoustics) (21 pages)
RECOMMENDATION	**APPROVAL WITH CONDITIONS**

1. INTRODUCTION

1.1 The Department of Biodiversity, Conservation and Attractions (DBCA) has received an application from the Applecross Tennis Club Inc. (ATC) proposing to install 12 lighting towers at Lot 264 The Strand, Applecross. The towers will be located on courts 11, 12, 13 and 14 to allow ATC to use these courts in the evening.

1.2 The subject land is reserved as Parks and Recreation under the Metropolitan Region Scheme.

1.3 The proposed development is to occur on land entirely within the Swan Canning development control area and therefore requires an approval from the Minister for Environment in accordance with Part 5 of the *Swan and Canning Rivers Management Act 2006* (SCRM Act).

1.4 DBCA has prepared this report in accordance with section 76 of the SCRM Act.

2. CONSULTATION

2.1 In accordance with section 74 of the SCRM Act, the application was initially advertised on DBCA's website for 42 days commencing 30 January 2023.

City of Melville

2.2 The City of Melville (the City) has undertaken a public consultation process for the proposal including a letter drop to adjacent landowners and residents, advertising on the City's website and placing two signs onsite. The proposal was deliberated at its Council meeting of 19 April 2023. The City considered that the proposed development was

acceptable when assessed against the relevant policy requirements and advised that the application be recommended to DBCA for approval with conditions.

2.3 The City's comments are provided in **Attachment 1A**.

Department of Water and Environmental Regulation

2.4 The application and environmental noise assessment report by EcoAcoustics (2023) were referred to the Department of Water and Environmental Regulation (DWER). DWER provided a detailed review of the noise information available and has advised that the proposal is unlikely to contravene the Environmental Protection (Noise) Regulations 1997. See below discussion under 'Amenity' (from 7.11 onwards).

2.5 DWER's comments are provided in **Attachment 1A**.

Public submissions

2.6 The City received 145 submissions via its consultation process, with 13 objections. A summary of the submissions received by the City is included in **Attachment 1A** (labelled page 69 of the meeting minutes).

2.7 Tennis West, the governing body for tennis in Western Australia, has provided ATC with a letter of support for the proposal to install lighting (**Attachment 1B**).

2.8 DBCA received 48 submissions via the consultation process with 43 submissions supporting the proposal and five submissions objecting to the proposal. A summary of the themes raised in the submissions and DBCA responses are provided in **Attachment 1C**.

3. PUBLIC CONSULTATION – SUBMISSIONS ON DRAFT REPORT

3.1 In accordance with the requirements of Part 5 of the SCRM Act, a copy of the draft report and proposed recommendations was provided to the applicant and the relevant stakeholders being the City and DWER. A copy was also published on the DBCA website between 31 July 2024 and 21 August 2024, with an invitation for public submissions.

3.2 A total of 127 submissions were received with 108 submissions supporting the proposal and 19 submissions objecting to the proposal. Submissions have been summarised and DBCA responses are provided in **Attachment 1D**.

3.3 The City presented the draft report to the Council meeting of 20 August 2024. Council endorsed the draft report and provided a proposed amendment to Condition 5 to recommend that lights do not operate on Sundays. The City has noted that the amendment to Condition 5 is a considered compromise between the interests of adjacent residents and the wider community in optimising the use of existing sporting facilities. Condition 5 has been modified accordingly (**Attachment 1A**).

4. RELEVANT POLICIES AND PLANS

- State Planning Policy 2.10 – Swan-Canning River System
- Corporate Policy Statement No. 42 – Planning for Land Use, Development and Permitting Affecting the Swan Canning Development Control Area
- Corporate Policy Statement No. 45 – Planning for Miscellaneous Structures and Facilities in the Swan Canning Development Control Area
- Environmental Protection (Noise) Regulations 1997

- Australian Standard AS/NZS 4282:2023 Control of the obtrusive effects of outdoor lighting

5. ENVIRONMENTAL AND PLANNING CONSIDERATIONS

- Environmental protection
- Lighting and noise management
- Amenity

6. BACKGROUND

6.1 ATC is located within Jeff Joseph Reserve, The Strand, Applecross (**Figure 1**) and comprises grassed, and hard and synthetic surfaced courts that currently operate during daylight hours. ATC holds regular evening social events for members and is available for hire by members and the general public (e.g. weddings, parties and fundraisers). Non-members can hire tennis courts for a fee.

Figure 1. Applecross Tennis Club lighting tower proposed locations in red. Swan Canning Development Control Area delineated in blue.

6.2 ATC has identified a demand from the general public, members and competition tennis players to use the courts outside daylight hours. The availability of night lighting will provide more opportunities for members and the wider community to use ATC's facilities and increase the participation rates in the sport.

6.3 Courts 11 and 12 are a synthetic surface, and courts 13 and 14 are hard surfaced (Figure 1). The courts were modified from grass in 2020. The proposed light towers will be located a minimum distance of 5m from the foreshore vegetation and 20m to the Swan River high water mark (court 14 is the closest point to the foreshore). The proposed light towers on courts 11 and 12 will be located a minimum of 30m from the foreshore vegetation and 50m from the high water mark. All courts are separated from the foreshore by a dual use pedestrian and cycle path.

6.4 The proposed light towers on courts 11 and 12 will be located a minimum distance of 30m from the closest residential lot boundary. The towers on courts 13 and 14 will be located a minimum of 58m from the closest residential lot boundary. Residential dwellings are generally setback a minimum of 5m from the lot boundaries.

6.5 Lights are proposed to operate as follows:

- until 10pm from Tuesday to Thursday for League/Pennant games. Otherwise lights will be switched off at 9pm. Competition games are anticipated to occur for 20 weeks of the year plus a possible extra four weeks if teams make the finals.
- until 9pm Monday to Sunday when League/Pennants games are not scheduled.

6.6 Courts will only be lit when they are in use, in accordance with the Tennis West Book-A-Court system that requires individual court lighting control. Lights will be on timers and can also be turned off manually if a game finishes early.

6.7 Tennis West, Western Australia's tennis governing body, supports the proposal and states that ATC is the only affiliated tennis club in the metropolitan area without lights. The proposed lighting will align with one of four Tennis West's strategic priorities, being *Priority 2 - Enhancing venue capacity* (**Attachment 1B**).

6.8 In response to concerns raised by DBCA and via public submissions, the lighting and acoustic information originally submitted by the applicant in December 2022 has been revised. The proposed lighting units have been upgraded to provide for reduced light spill and glare. In addition, an amended noise assessment was also provided.

Lighting

6.9 In assessment of an application, DBCA requires that lighting should be designed to minimise light spill so that fauna, community enjoyment and visual amenity are not unacceptably affected. All lighting is expected to be consistent with the *National Light Pollution Guidelines for Wildlife* (Department of Climate Change, Energy, the Environment and Water, 2023) and AS/NZS4282 *Control of the Obtrusive Effects of Outdoor Lighting*. Further, light spill to the river and within habitat areas should be no more than 0.01-0.03 lux (moonlight), where possible, to ensure no adverse ecological consequences.

6.10 ATC proposes to install four 10m high light towers to courts 11 and 12 (with eight light fixtures for each pole) and eight 8m high light towers to courts 13 and 14 (with four light fixtures for each pole). The lighting has the potential to create light spill on the foreshore and river, particularly from courts 13 and 14, which are closest to the foreshore vegetation. Light spill from the courts could also potentially affect adjacent residents located along The Strand. It is noted that the lighting towers will be visible above the tree line when viewed from the river and from the adjacent residences.

6.11 The lighting information provided by Musco (2023), specialists in sports and infrastructure lighting, includes illumination summary diagrams that demonstrate the expected lux levels for each of the courts and the projected light spill towards the foreshore and residential dwellings (**Attachment 1E**). The lighting proposal has considered the requirements for the Australian Standards related to lighting levels for outdoor sport events AS2560.2:2021, and the control of obtrusive effects of outdoor lighting AS/NZS4282:2023.

6.12 The proposed lighting product (TLC-LED-400) is designed for sports lighting and incorporates glare shields to manage light spill and glare. **Attachment 1E** provides the specifications of the units and includes images that compare the visual impact of the TLC-LED-400 units to other lighting options. The poles are comprised of galvanised steel with a pole base of 300mm that tapers to 90mm at the top of the pole. The crossarm for the single fixtures for courts 13 and 14 are 40cm wide and the crossarms for the pair of fixtures (side by side arrangement) for courts 11 and 12 are 130cm wide.

6.13 Musco has assessed light spill using 1.5m above grade height, which is recommended in the Australian Standard addressing the control of obtrusive effects of outdoor lighting. The lighting information from Musco (illumination summary 13 Spill) predicts that there will be no light spill (0 lux) at the foreshore vegetation and river, or at the adjacent residential properties. The predicted lux levels resulting from the proposed court lighting to the residential property line on The Strand, adjacent to courts 11 and 12, are estimated to be 0 lux. There are some trees located between courts 11 and 12 and the road, which also provides some visual buffering for the adjacent residents.

7. DISCUSSION

Environmental protection

7.1 Corporate Policy Statement 42 aims to ensure that land use and development on and adjacent to the river system maintains and enhances the quality and amenity of the river environment. Any proposed development should be undertaken to prevent detrimental impacts to the foreshore and river.

7.2 ATC is located adjacent to a narrow corridor of foreshore vegetation ranging from 10m to 20m wide. The vegetation comprises areas of dense, tall *Acacia* sp. with patches of sedges scattered throughout. The proposed works will not require the clearing or pruning of any foreshore vegetation. The vegetated area abuts an area of intertidal flats on the Swan River.

7.3 Seven nationally listed migratory shorebird species have been recorded within a 500m radius of ATC. Of note, a Great Knot (*Calidris tenuirostris*), which is listed as critically endangered under the *Biodiversity Conservation Act 2016* (BC Act), was recorded approximately 200m east of ATC. A Red Knot (*Calidris canutus*), which is listed as endangered under the BC Act, was recorded approximately 330m north-west of the ATC near Applecross Jetty. Both species migrate from the northern hemisphere and were observed in Applecross in March 2001.

7.4 Migratory shorebird species have been observed along the Melville foreshore from Point Walter to Heathcote Reserve. Migratory species and other shorebirds are known to congregate at Point Waylen within Swan Estuary Marine Park (Alfred Cove), approximately 3km south of the subject site. Shorebirds will move across the river and between the three designated areas of Swan Estuary Marine Park (Alfred Cove, Pelican Point and Milyu). The area of the river adjacent to ATC is not considered to be a major feeding or roosting site for migratory shorebirds.

7.5 A Ministerial Authorisation under section 40 of the BC Act is required to take or disturb threatened species. In consideration of the management measures proposed and the low risk of potential impacts to threatened species, a section 40 authorisation is not required for this proposal.

7.6 The *National Light Pollution Guidelines for Wildlife* (Department of Climate Change, Energy, the Environment and Water, 2023) acknowledge that the effect of artificial light on migratory shorebirds is understudied. The guidelines recommend implementing light mitigation management measures in accordance with regulatory considerations, including appropriate Australian Standards.

7.7 The *National Light Pollution Guidelines for Wildlife* acknowledge the impact that the colour of lighting can have on wildlife and in particular, wildlife can be sensitive to blue light. The lights proposed at ATC are 5700K which is in the blue end of the colour temperature scale. Musco has indicated that the lights can be modified to 4000K, which removes a large portion of the blue colour spectrum and is preferrable for use near

wildlife. Musco has confirmed that changing the lights to 4000K will not compromise the quality of light for playing tennis.

7.8 The applicant has proposed lighting infrastructure that is compliant with Australian Standards and incorporates mitigation measures such as glare shields, to reduce the potential for glare to surrounding residents and light spill to the foreshore and river. The lighting information from Musco predicts that there will be no light spill (0 lux) at the vegetation edge along the foreshore or into the river.

7.9 To confirm that the lighting is operating within the predicted parameters, a lighting audit is recommended within three months of installation, and a condition of approval is recommended in this regard. If monitoring indicates that the predicted lux levels are exceeded and/or environmental impacts are observed, lighting adjustments or modifications will be required to address any issues.

7.10 The depth of the pole footings required to install the lighting will be approximately 2.4m. An environmental assessment undertaken in 2019, prior to courts 11-14 being modified from grass to hard/synthetic, indicated that the depth to groundwater across the site is approximately 1.5m. It should be noted that courts 11 and 12 were raised approximately 50cm and courts 13 and 14 were raised approximately 1m during the change of surface. A Construction Environmental Management Plan will be required prior to installation of the poles and relevant geotechnical information will be expected in this document. Any dewatering must be consistent with Corporate Policy 50 *Planning for dewatering affecting the Swan Canning Development Control Area.* A condition of approval and advice note are recommended.

Amenity

7.11 Corporate Policy Statement 42 states that proposals should enhance and protect the character and landscape setting of the Swan Canning river system, consistent with the multiple use of the development control area. The development of recreational facilities must be consistent with the relevant reserve's assigned purpose.

7.12 The *Swan Canning River Protection Strategy* encourages the use of the Riverpark to promote active and healthy lifestyles for the community (Strategy 17, Action 17.4), while protecting the Riverpark aesthetics.

7.13 Night tennis at ATC is an intensification of use, being an extension of the existing operating hours and a corresponding increase in light and community noise, which has the potential to impact the adjacent residents. ATC has advised that there will be a maximum of 16 players on the courts during night games. ATC has indicated that it is not common for spectators to attend evening tennis competition games.

7.14 The acoustic information provided by EcoAcoustics (**Attachment 1F**) includes site specific noise monitoring that indicates that the proposal to undertake night tennis will comply with the Environmental Protection (Noise) Regulations 1997.

7.15 The EcoAcoustics information was referred to DWER for advice in regard to potential compliance with the Environmental Protection (Noise) Regulations 1997. DBCA has obtained technical advice from DWER to assist in understanding the potential noise and amenity impacts from the proposal. The applicant is required to ensure that its operation addresses the requirements of the Environmental Protection (Noise) Regulations 1997.

7.16 DWER has acknowledged that measuring this type of community noise is difficult due to the variability of noise from the activities and the background noise that interferes with monitoring. It is noted that noise monitoring of night tennis at ATC cannot be undertaken

until the lights are in place, however, a comprehensive review of the existing acoustic information indicates that the proposal is unlikely to contravene the noise regulations.

7.17 It is acknowledged that night tennis at ATC will result in additional noise in the evening that may impact adjacent residents, particularly as people leave the site in cars. DWER has advised that the noise from propulsion or braking systems of motor vehicles operating on the road reserve, which includes the parking along The Strand, is exempt from the Environmental Protection (Noise) Regulations 1997.

7.18 ATC currently relies on parking provision within the adjoining road reserve. Existing parking available along The Strand is approximately 56 perpendicular bays. It is noted that there will be a maximum of 16 players on the courts during night games and spectators do not usually attend these games. The existing parking is therefore considered adequate to accommodate evening patronage of the four lit courts when in use.

7.19 ATC has requested that lights be allowed until 10pm from Tuesday to Thursday and to 9pm for the rest of the week. Courts will only be lit to 10pm when competition tennis is scheduled, and will be switched off at 9pm otherwise. Competition games will occur for a maximum of 24 weeks of the year.

7.20 The City of Melville initially recommended a condition that lights are turned off at 9pm nightly to align with LPP1.16: *Flood and Security lighting* and LPP3.4: *Tennis courts*. It is noted that LPP1.16 does not apply to the lighting of private or public tennis courts and LPP3.4 applies to domestic tennis courts in residential properties.

7.21 It should be noted that the City of Melville's initial advice was provided in the context of the original lighting and noise information submitted to DBCA. The revised lighting and acoustic information has addressed initial concerns in terms of potential impacts to the environment and amenity for adjacent residents. Further, DBCA considers that operating the lights at ATC for an extra hour to 10pm for three nights of the week will not present significant additional impacts to the environment or amenity of the locality.

7.22 The City presented the draft report to the Council meeting of 20 August 2024, in which the draft report was endorsed. Council provided a suggested amendment to Condition 5 to recommend that lights are not operated on Sundays. The condition relating to approved operating hours has been modified accordingly.

7.23 It is recommended that ATC encourages people to be mindful of residents by keeping noise to a minimum when playing in the evening and leaving the site. An Operations Plan including this commitment is recommended.

7.24 The expected light spill from courts 11 and 12 towards the residential property line along The Strand is predicted to be 0 lux and within the levels recommended by Australian Standards in a suburban setting. The proposal has incorporated lighting infrastructure and specifications that aim to reduce any potential adverse light impacts for adjacent residents.

7.25 It is acknowledged that implementation of the proposal will modify the adjacent residents' views with the installation and operation of light poles. However, the light poles are narrow and while visible during the day, are not considered to be visually obtrusive structures and will not dominate or block river views.

7.26 While the visual landscape of the reserve will change with the installation and operation of the light poles, the bulk, scale and style of the proposed development is not

considered likely to create significant visual impacts. The applicant has addressed the potential for glare and light spill towards residents and the river by proposing appropriate lighting design. The amenity values of the adjacent residents and community will be largely maintained, and the development is compatible with the purpose of the land as a Parks and Recreation reserve.

8. SWAN RIVER TRUST

8.1 In accordance with section 75(3A) of the SCRM Act, the Swan River Trust considered DBCA's draft report at its meeting of 18 June 2024 and resolved to advise the Director General of DBCA that it recommends the application be approved subject to the conditions outlined in DBCA's draft report. DBCA had initially contemplated the imposition of a 9pm curfew, however, following advice from the Swan River Trust it was noted that a 10pm curfew for three nights of the week when in competition season and 9pm otherwise, was reasonable and unlikely to result in any additional adverse impacts. The Swan River Trust acknowledges that operating the lights at ATC until 10pm from Tuesday to Thursday is consistent with other similar facilities operating within the Swan Canning Riverpark.

9. CONCLUSION

9.1 The installation of lighting towers at ATC can be managed to mitigate any potential adverse impacts to the vegetated foreshore and river, and adjacent residents.

9.2 The draft report recommended operating the lights to 10pm for three days of the week (Tuesday to Thursday) when competition games are scheduled and to 9pm for the rest of the week, including Sunday. Consistent with advice from the City of Melville and a Council resolution, it is recommended that lights do not operate on Sunday.

9.3 On balance, the proposal provides an opportunity to improve the community benefits and amenity of the Riverpark while managing any significant adverse impacts to the environment and adjacent residents.

9.4 For these reasons, the proposal is recommended for approval, subject to conditions and advice.

10. RECOMMENDATION – APPROVAL WITH CONDITIONS

That the Director General of DBCA advises the Minister for Environment that the proposal to install lighting towers at the Applecross Tennis Club as described in the application received on 1 December 2022 and the additional information received 8 December 2023, 30 January 2024 and 21 March 2024, be approved, subject to the following conditions:

CONDITIONS

1. Approval to implement this decision is valid for two (2) years from the date of the approval. If substantial on-site works have not commenced within this period, a new approval will be required before commencing or completing the development.

2. All works are to be undertaken in accordance with a Construction Environmental Management Plan which is to be submitted to and approved by the Department of Biodiversity, Conservation and Attractions prior to commencement of works (**Advice Notes 2 and 3**).

3. Prior to commencement of use, a lighting audit is to be conducted to demonstrate that the lighting has been installed in accordance with the approval and approved by the Department of Biodiversity, Conservation and Attractions. In particular the lighting is to be in accordance with:

a. the lighting plan prepared by Musco dated 24 January 2024
b. LED lighting to a maximum of 4000K correlated colour temperature (**Advice Note 4**).

4. The approved use is to be undertaken in accordance with an Operations Plan, which is to be submitted to and approved by the Department of Biodiversity, Conservation and Attractions prior to commencement of use (see **Advice Note 5**).

5. Lighting is to be installed with a timer that ensures that the lights do not operate:
   a. from 10pm to 6am on Tuesdays to Thursdays when League/Pennants games are scheduled
   b. from 9pm to 6am on Mondays to Saturdays when League/Pennants games are not scheduled
   c. on Sundays and when the courts are not in use.

6. Upon completion of the works, the applicant shall remove all waste materials, equipment, machinery and any temporary structures and ensure the site is cleaned up.

ADVICE TO APPLICANT

1. Notifications and documents required as a condition of this approval can be emailed to rivers.planning@dbca.wa.gov.au.

2. Regarding **Condition 2**, the Construction Environmental Management Plan (CEMP) should describe how the authorised works will be managed to minimise potential environmental impacts. Guidance for preparation of a CEMP is provided in DBCA Guidance Note 6 – *Construction Environmental Management Plans*, (https://bit.ly/SCRMAPolicies).

3. Regarding **Condition 2**, in the event the site requires dewatering during construction, the Department of Biodiversity, Conservation and Attractions' Policy 50: *Planning for dewatering affecting the Swan Canning Development Control Area* has dewatering effluent discharge standards, which are required to be met if it is proposed to discharge directly or indirectly (via the stormwater system) to the river. If dewatering is required for construction, discharge to sewer will be the preferred approach.

4. Regarding **Condition 3**, the lighting audit should demonstrate that the predicted glare and lux levels are being met and that the lighting as installed is in accordance with the relevant Australian Standards being AS2560.2:2021 and AS/NZS4282:2023.

5. With regard to **Condition 4**, the Operations Plan shall address (but not be limited to):
   a. hours of operation
   b. minimisation of lighting when not in use
   c. minimisation of noise from additional patrons, traffic and parking.

6. This development application has been granted in accordance with the *Swan and Canning Rivers Management Act 2006* and does not negate the need for the applicant to address the requirements of other legislation, including the Environmental Protection (Noise) Regulations 1997.

FINAL REPORT ENDORSED

Signed: _____ Date: 7 October 2024

Peter Dans

Acting Director General, Chief Executive Officer

ATTACHMENT 1A

City of Melville

MINUTES

ORDINARY MEETING OF THE COUNCIL

6.30pm Tuesday, and Wednesday 18 & 19 April 2023
Held in the Council Chambers, Melville Civic Centre
10 Almondbury Road Booragoon

The City of Melville acknowledges the Bibbulmun people as the Traditional Owners and custodians of the lands on which the City stands today and pays its respect to the Whadjuk people, and Elders both past, present and emerging.

Minutes to be confirmed at the next Ordinary Council Meeting
These minutes are hereby confirmed as true and accurate

Mayor Gear_____ Date _____

Our Vision
Engaging with our diverse community to achieve an inclusive, vibrant and sustainable future.

Our Mission
To provide good governance and quality services for the City of Melville community.

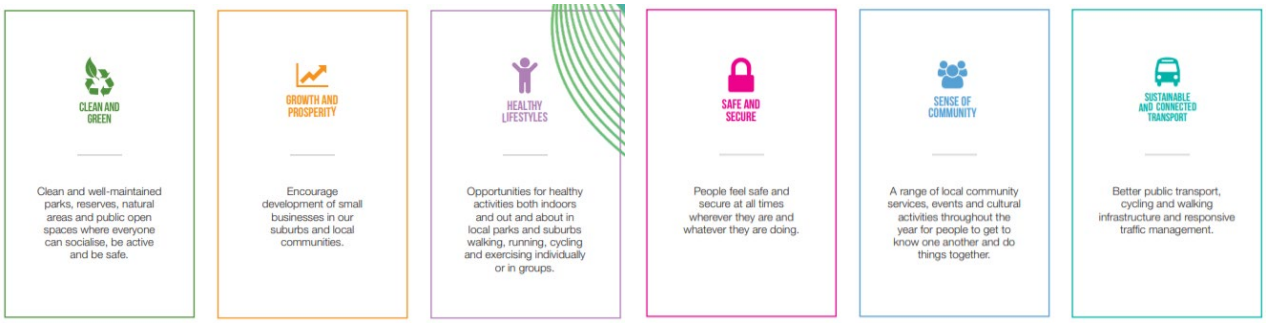
Our Values

Excellence
Striving for the best possible outcomes

Participation
Involving, collaborating and partnering

Integrity
Acting with honesty, openness and with good intent

Caring
Demonstrating empathy, kindness and genuine concern



Making A Deputation

A deputation is a verbal presentation by one or more members of the public on a matter to be considered at the Council meeting. Deputations are made at the relevant Agenda Briefing Forum, held one week prior to the Ordinary Meeting of Council.

Information on making a deputation is available on the City's website Request to make a Deputation.

Public Question Time

You can ask a question at a Council meeting during Public Question Time. Information on how to ask a question can be found on the City's website Public Question Time.

Complex questions or those related to matters on the agenda and requiring a response at the meeting are "questions on notice" and should be submitted in writing, by the close of business the Tuesday prior to the meeting.

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Any statement, comment or decision made at a Council or Committee meeting regarding any application for an approval, consent or licence, including a resolution of approval, is not effective as an approval of any application and must not be relied upon as such.

Any person or entity who has an application before the City must obtain, and should only rely on, written notice of the City's decision and any conditions attaching to the decision, and cannot treat as an approval anything said or done at a Council or Committee meeting.

Any advice provided by an employee of the City on the operation of written law, or the performance of a function by the City, is provided in the capacity of an employee, and to the best of that person's knowledge and ability. It does not constitute, and should not be relied upon, as a legal advice or representation by the City. Any advice on a matter of law, or anything sought to be relied upon as representation by the City should be sought in writing and should make clear the purpose of the request.

Audio Recording/ Access to Recording

In accordance with the Council Policy CP- 088 Creation, Access and Retention of Audio Recordings of the Public Meetings this meeting is electronically recorded. All recordings are retained as part of the City's records in accordance with the State Records Act 2000 and the General Disposal Authority for Local Government Records. The Audio recording may be accessed at www.melvillecity.com.au/agendas.

CONTENTS

MOTIONS

With Previous Notice

Without Previous Notice

Nil.

MATTERS FOR WHICH THE MEETING WAS CLOSED

1 OFFICIAL OPENING

The Presiding Member welcomed those in attendance to the meeting and officially declared the meeting open at 6:30pm and invited Cr Wheatland to read the Acknowledgement of Country and advised those present of the Purpose of the Agenda Briefing Forum, the Disclaimer, the Affirmation of Civic Duty and Responsibility and the Audio Recording Advice.

2 ATTENDANCE AND APOLOGIES

Mayor Hon. G Gear

In Attendance

Cr T Fitzgerald (Deputy Mayor)	Palmyra – Melville – Willagee
Cr K Wheatland	Palmyra – Melville – Willagee
Cr N Pazolli	Applecross – Mount Pleasant
Cr C Ross	Applecross – Mount Pleasant
Cr D Macphail	Bateman – Kardinya – Murdoch
Cr N Robins	Bateman – Kardinya – Murdoch
Cr G Barber	Bicton – Attadale – Alfred Cove *(electronic attendance)*
Cr J Edinger	Bicton – Attadale – Alfred Cove
Cr J Spanbroek	Bull Creek – Leeming
Cr M Woodall	Bull Creek – Leeming
Cr M Sandford	Central
Cr K Mair	Central

Officers

Mr M Tieleman	Chief Executive Officer
Mr M McCarthy	Director Environment and Infrastructure
Mr G Ponton	A/Director Urban Planning
Ms G Bowman	Director Community Development
Ms C Newman	Head of Governance
Ms R Davis	Governance Officer
Ms M Smith Poulton	Business Support (Administration) Officer

At the commencement of the meeting:

Public Gallery	49
Electronic	12
Press	0

Apologies

Nil.

On Approved Leave of Absence

Nil.

At 9:55pm the Mayor brought forward Item UP23/4028 – Erection of Floodlights to Applecross Tennis Club – Lots 260-264 (30) The Strand, Applecross WA 6153 for the convenience of those in the public gallery.

UP23/4028 – ERECTION OF FLOODLIGHTS TO APPLECROSS TENNIS CLUB – LOTS 260-264 (30) THE STRAND, APPLECROSS WA 6153 (REC) (ATTACHMENT)

Ward	:	Applecross-Mount Pleasant Ward
Category	:	Operational
Application Number	:	DA-2023-30
Property	:	Lots 260-264 (30) The Strand, Applecross WA 6153
Proposal	:	Floodlight Additions to Applecross Tennis Club
Applicant	:	Applecross Tennis Club Inc
Owner	:	State of Western Australia (C/- City of Melville)
Disclosure of any Interest	:	No Officer involved in the preparation of this report has a declarable interest in this matter.
Responsible Officer	:	Peter Prendergast Manager Statutory Planning
Previous Items	:	N/A

AUTHORITY / DISCRETION

		DEFINITION
☐	Advocacy	*When the Council advocates on its own behalf or on behalf of its community to another level of government/body/agency.*
☐	Executive	*The substantial direction setting and oversight role of the Council. e.g. adopting plans and reports, accepting tenders, directing operations, setting and amending budgets.*
☐	Legislative	*Includes adopting local laws, town planning schemes & policies.*
☐	Review	*When the Council operates as a review authority on decisions made by Officers for appeal purposes.*
☒	**Quasi-Judicial**	***When the Council determines an application/matter that directly affects a person's right and interests. The judicial character arises from the obligation to abide by the principles of natural justice. Examples of Quasi-Judicial authority include town planning applications, building licences, applications for other permits/licences (e.g. under Health Act, Dog Act or Local Laws) and other decisions that may be appealable to the State Administrative Tribunal.***
☐	Information	*For the Council to note.*

UP23/4028 – ERECTION OF FLOODLIGHTS TO APPLECROSS TENNIS CLUB – LOTS 260-264 (30) THE STRAND, APPLECROSS WA 6153 (REC) (ATTACHMENT)

KEY ISSUES / SUMMARY

- Department of Biodiversity, Conservation and Attractions (DBCA) approval is sought for the installation of floodlight columns to Courts 11-14 at Applecross Tennis Club.
- A total of twelve floodlighting towers are proposed, four at a height of 10 metres and eight to a height of eight metres.
- The application site is located on land zoned Parks and Recreation under the Metropolitan Region Scheme (MRS). As the subject site is located within the Swan Canning Development Control Area, DBCA is responsible for assessment of development applications as per Part 5, Section 72(1) of the *Swan and Canning Rivers Management Act 2006*.
- In accordance with the *Swan and Canning Rivers Management Act 2006*, the Minister for the Environment is the decision maker for Part 5 applications. The City's comments will be included in a final report prepared by DBCA to the Minister for Environment on the proposal.
- Details of the proposed development were presented to the Development Advisory Unit (DAU) meeting held on 14 March 2023 with an associated report published to the City's website.
- The application seeks approval for the floodlights to operate for the four courts up until 10pm every night to allow for League (Pennant) Tennis to be played up to that time.
- The details of the proposed development have been assessed against *Local Planning Scheme No. 6* (LPS6), *Local Planning Policy 1.16 – Flood and Security Lighting* (LPP1.16) and *Local Planning Policy 3.4 – Tennis Courts (LPP3.4).*
- The application was advertised via letters to surrounding landowners and occupiers. Two on site signs were also erected and full details of the proposal were made available on the City's Melville Talks website.
- A total of 145 submissions were received with 13 objections, 131 supports and 1 neither supporting nor objecting to the proposal.
- The proposed development is considered to be acceptable when assessed against the relevant policy requirements. A condition of approval is recommended to limit floodlight operation to 9.00pm, in keeping with the relevant Council policy.
- It is recommended that the application be recommended to DBCA for conditional approval.

Figure 1: Aerial photography of subject site

UP23/4028 – ERECTION OF FLOODLIGHTS TO APPLECROSS TENNIS CLUB – LOTS 260-264 (30) THE STRAND, APPLECROSS WA 6153 (REC) (ATTACHMENT)

BACKGROUND

Scheme Provisions

MRS Zoning	:	Parks and Recreation
LPS6 Zoning	:	MRS Reserve for Parks and Recreation
R-Code	:	N/A
Use Type	:	Active Recreational Reserve
Use Class	:	N/A, no change to existing use of reserve (Tennis).

Site Details

Lot Area	:	13842m²
Retention of Existing Vegetation	:	Yes
Street Tree(s)	:	Yes, to be retained
Street Furniture (drainage pits etc.)	:	N/A
Site Details	:	Refer to Figure 1 above

4028 Plans Applecross Tennis Club

BACKGROUND

In 2019, a development application (DA-2019-1424) was referred to the City for comment under Part 5 of the *Swan and Canning River Management Act 2006.* This sought approval for the conversion of two courts to grass courts, the conversion of four grass courts to hard courts and installation of 12, 10m high floodlight towers to the proposed four hard courts. However, this application was withdrawn in 2020 after it was determined by the DBCA that the cyclone fencing referenced in the plans was already approved, in which case the applicant made the decision to apply for the remainder of the work under a separate application.

Therefore, a new development application (DA-2020-442) was lodged in the form of a Form 7 permit which consisted of the following and was also referred to the City to comment on by DCBA:

- The conversion of four existing grass courts into four hard courts;
- These same four courts were proposed to be floodlit by 12, 10m high floodlight towers, with the lights to be off by 10pm;
- Two courts converted from hard courts to grass courts;
- Minor retaining along parts of the affected courts (less than 500mm); and
- Associated stormwater management.

After the City completed an extensive community consultation process, the City was of the opinion that the concerns raised by objectors had been adequately addressed by the supporting information and the benefits to the community of extending the operating hours of the tennis club were considered to be substantial. As such, the City recommended support the proposal to DBCA subject to the inclusion of conditions, including a condition to limit the use of the lights to 9pm only.

UP23/4028 – ERECTION OF FLOODLIGHTS TO APPLECROSS TENNIS CLUB – LOTS 260-264 (30) THE STRAND, APPLECROSS WA 6153 (REC) (ATTACHMENT)

The DBCA has issued two separate permits in relation to the above development application, in relation to court resurfacing and permitter fencing. The issue of the floodlighting installation remains outstanding however and is the subject of this current application. It is noted that the Tennis Club currently operates without the benefit of any floodlighting which serves to limit their playing ability outside daylight hours.

DETAIL

The site is under the ownership of the City and is zoned Parks and Recreation under the MRS. Courts 11 and 12 are proposed to be lit by four towers, each at 10metres in height. Courts 13 and 14 are proposed to have four towers for each court, with the towers at 8m in height. The floodlights are proposed to automatically turn off at 10pm every night to allow for League (Pennant) Tennis to be played outside daylight hours.

The minimum distance between a residential property (41 The Strand) and the proposed floodlights is 30m, this distance being in respect of one single column. Other columns are located further away, with the maximum separation between residential properties and the floodlights being up to 70m (refer to Figure 2 below).

Figure 2: Location of proposed floodlighting towers

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Lighting

The proposed lighting is designed in accordance with *Australian Standards AS2560.2 Sports Lighting* and AS4282-2019 *Control of Obtrusive Effect of Outdoor Lighting*. The Lighting report submitted in support of the proposal concludes that there will be no light spill into any of the nearby residential properties to the south of the tennis courts.

The Lighting Report includes inconsistencies in respect of the impact of the lighting on the footpath located to the immediate north of the tennis club. On the one hand it is suggested that the maximum light levels (brightness) exceed the recommended levels, although elsewhere the Lighting Report suggests otherwise. It is considered that as the use of the footpath does not directly impact residential amenity, and as users are unlikely to be compromised by a well-lit footpath, that for the purposes of this referral the inconsistency be simply noted.

Local Planning Policies

The application has been assessed against the provisions of LPS6, LPP1.16 pertaining to floodlighting towers on reserves under the care and control of the City of Melville and LPP3.4 pertaining to tennis courts lighting.

Local Planning Policy 1.16 – Flood and Security Lighting

Development Requirement	Proposed	Comments	Delegation to approve variation
(a) Location of the proposed lighting towers in relation to the surrounding properties.	Floodlighting towers setback a minimum of 30 metres from adjoining residential properties.	Requires assessment against the policy objectives of LPP1.16.	Development Advisory Unit (DAU)
(b) Light emissions wholly contained within the subject lot and satisfy *Australian Standard AS.2560 – Sports Lighting.*	The majority of light emissions are contained for within the subject lot. Light spillage does not impact any residential property.		
(c) Hours of operation for flood lighting.	Lights to be turned off by 10pm every night.		
(d) The potential adverse impacts upon any adjoining residential properties.	Light emissions contained for the majority, wholly within the subject site.		

UP23/4028 – ERECTION OF FLOODLIGHTS TO APPLECROSS TENNIS CLUB – LOTS 260-264 (30) THE STRAND, APPLECROSS WA 6153 (REC) (ATTACHMENT)

Local Planning Policy 3.4 – Tennis Courts

Development Requirement	Proposed	Comments	Delegation to approve variation
4.1 Floodlighting for tennis courts shall comply with the following requirements and be certified** as being compliant with the relevant Australian Standard*** by a suitably qualified lighting consultant*:	Lighting Report has been prepared by a qualified lighting consultant who has confirmed that the report is compliant with the relevant Australian Standards. However, as identified above, a discrepancy in the Lighting Report has been identified which will need to be addressed.	Requires assessment against the policy objectives of LPP3.4.	DAU
4.2 A timer is to be installed in the lighting circuit to ensure that all floodlights are extinguished between the hours of 9pm and 7am.	Floodlights proposed to be extinguished at 10pm each night.		
4.3 In order to mitigate the impacts of the flood lighting on adjoining residential properties, screen planting may be required.	No screen planting proposed and not required as no light spill falls into any adjoining residential properties.		
6.1 Applications for the installation of tennis courts are to be made in accordance with the Regulations.	Lighting Report has been prepared by a qualified lighting consultant who has confirmed that the report is compliant with the relevant Australian Standards. No Acoustic Report has been provided as part of this revised submission. Applicants are relying on previous report provided as part of DA-2020-442.		
6.4 Subject to public consultation as outlined in Clause 4.3 above, the allowable times for the flood lighting of tennis courts may be increased to 10 pm where the amenity of the adjoining residents is safeguarded.	Floodlights proposed to be extinguished at 10pm each night.		

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STAKEHOLDER ENGAGEMENT

I. COMMUNITY

Advertising Required:	Yes
Neighbour's Comment Supplied:	Yes
Reason:	Required pursuant to LPP 1.1 Planning Process and Decision Making Clause 3.4(a)
Support/Object:	145 submissions were received with 13 raising objections, 131 in support and 1 neither supporting nor objecting to the proposal.

A summary of the comments received and the City's response is provided in the table below.

Summary of Issues Raised	**Comments**	**Action (Condition/ Uphold/ Not Uphold)**
Support expressed for extended usage of the courts .	Support Noted.	Uphold
The extended usage of hours for night is a benefit as the reserve would be utilised all year round and security enhanced.	Support Noted.	Uphold
More opportunity for players to play and develop their skills.	Support Noted.	Uphold
Very positive impact for club & community.	Support Noted.	Uphold
Currently use these courts and the lights would enable to get much more use of them during the year especially in winter when days are shorter.	Support Noted.	Uphold
Increases opportunities for both club members and the broader community, including local residents, to enjoy recreational tennis, which aligns with the City's strategic objectives to support healthy lifestyles and provide a sense of community.	Support Noted.	Uphold
The project will align to one of Tennis West's four strategic priorities, which are key to the successful and sustainable development of tennis facilities. Of these, Priority 2 - Enhancing venue capacity, specifically states "Additional floodlighting is required at strategic locations to support the demand for night tennis."	Support Noted.	Uphold

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Summary of Issues Raised	**Comments**	**Action (Condition/ Uphold/ Not Uphold)**
Concerns for the local fauna, especially the birdlife nesting and living in close proximity to the tennis club. Studies overseas have shown that LED lighting can affect the local biodiversity.	Noted. DBCA have received advice from their Species and Communities Program that seven nationally listed migratory shorebird species have been recorded within a 500 m radius of the Applecross Tennis Club. The most important observation is of Great Knot, which is listed as critically endangered under the *Biodiversity Conservation Act 2016*. The environmental report submitted in 2019, didn't include a fauna survey. This is a matter for consideration of the DBCA. An advice note to raise awareness of the expressed concern is proposed to be provided to the DBCA.	Advice Note recommended
There is no demonstrable demand for the proposed facilities.	Application has been lodged in response to applicants assessment of demand.	Not Uphold
Inadequate parking at the Club and what is being proposed is only going to exacerbate the matter further.	The installation of floodlighting does not result in the need for additional car parking as the tennis club land use exists already and has the associated car parking facilities.	Not Uphold
Applecross Tennis Club has continued to encroach upon open public space by building more tennis courts.	The proposed floodlighting extends the active use of the reserve for tennis. The use of the reserve for tennis is consistent with the intended use of the reserve given its zoning under the MRS as a 'Parks and Recreation' reserve.	Not Uphold
The new proposed lighting will cause light spill into the home.	A Light Assessment has been provided by the applicant demonstrating the proposed lights used within the towers will not spill into any residential properties to the south.	Not Uphold
Don't support lights till 10pm.	Noted. A condition has been recommended requiring the towers to be switched off after use and by 9pm each night.	Condition recommended
Social issues that will arise by lights being on late at night.	This is not a material planning consideration.	Not uphold
Not a valid application.	The application is valid and has been referred to the City by DBCA.	Not Uphold
The proposed light poles will be visually obtrusive.	Concerns about the visual amenity of the foreshore are rebuffed on the grounds that the generally uninhibited vista of the Swan River foreshore is not considered to be encumbered via the narrow light poles proposed.	Not Uphold

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Summary of Issues Raised	**Comments**	**Action (Condition/ Uphold/ Not Uphold)**
Environmental statement within Environment report is purely subjective.	Noted. This is referring to a report provided as part of a previous application in 2019. No environmental report has been provided to the City by DBCA to review as part of the City's assessment of this application. However, DBCA as part of their assessment will need to ensure all relevant environmental requirements are addressed. An advice note has been recommended ensuring all environmental aspects are to comply with the relevant standards.	Advice Note recommended
The statement from the report dated 13/8/2019 prepared by Gabriels Hearne Farrel Acoustic Consultants dated 13/8/2019 that *"predicted noise emissions are unlikely to be any louder than those that exist"* is clearly based on daytime use of hardcourts but is not valid for the current application for floodlighting to permit night tennis up to 10pm.	Noted. This is referring to a report provided as part of a previous application in 2019. No acoustic report has been provided to the City by DBCA to review as part of the City's assessment of this application. However, DBCA as part of their assessment will need to ensure all relevant noise requirements are addressed. An advice note has been recommended ensuring noise is to comply with the relevant standards.	Advice Note recommended
Contrary to existing City policies.	Noted. Conditions have been recommended to ensure compliance with relevant City Local Planning Policies in regard to operating hours of the lights being switched off at 9pm each night and before the floodlights are installed, verification is required to confirm that the floodlights are in accordance with the relevant Australian Standards.	Conditions recommended

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Summary of Issues Raised	Comments	Action (Condition/ Uphold/ Not Uphold)
Noise emitting from the development.	The application is for twelve floodlighting towers. The noise associated with tennis being played on this reserve is considered acceptable and consistent with the designation of the reserve at Applecross Tennis Club as an active reserve. The lighting is required to be switched off from 9pm which will ensure sports activity cease at this time reducing any potential amenity impact. An advice note has been recommended to ensure that noise is to comply with the *Environmental Protection (Noise) Regulations 1997* at all times.	Advice Note recommended
No protection or cover provided from the lights.	The proposed floodlighting towers have been designed to minimise light spill. The floodlights are designed in accordance with the relevant Australian Standards to direct illumination towards the playing area, and as stated avoids spill towards residential properties.	Not Uphold

II. OTHER AGENCIES / CONSULTANTS

As the subject site is located within the Swan Canning Development Control Area, DBCA is responsible for assessment of development applications as per Part 5, Section 72(1) of the *Swan and Canning Rivers Management Act 2006*. In accordance with the *Swan and Canning Rivers Management Act 2006*, the Minister for the Environment is the decision maker for Part 5 applications. The City's comments will be included in a final report prepared by DBCA to the Minister for Environment on the proposal.

STATUTORY AND LEGAL IMPLICATIONS

If the Minister for Environment gives an approval subject to a condition or restriction, the applicant may request the Minister to reconsider that condition or restriction under Part 5 s.82 of the *Swan and Canning Rivers Management Act 2006*.

FINANCIAL IMPLICATIONS

There are no financial implications for the City relating to this proposal.

STRATEGIC, RISK AND ENVIRONMENTAL MANAGEMENT IMPLICATIONS

There is no strategic risk or environmental management implications with this application.

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POLICY IMPLICATIONS

There are no Local Planning Policy or Council Policy implications in relation to this development.

COMMENT

Sections 2 and 3 of LPP1.16 require planning approval for the installation of all floodlights within reserves under the care and control of the City of Melville. Applications for floodlighting in such instances are assessed taking into account the following:

(a) The location of the proposed lighting towers in relation to the surrounding properties.
(b) Whether the light emissions are wholly contained within the subject lot and satisfy Australian Standard AS.2560 – Sports Lighting.
(c) Hours of operation.
(d) The potential adverse impacts upon any adjoining residential properties.

Sections 4 of LPP3.4 outlines that tennis courts are to comply with the following in respect of lighting:

4.1 Floodlighting for tennis courts shall comply with the following requirements and be certified as being compliant with the relevant Australian Standard by a suitably qualified lighting consultant.
4.2 A timer is to be installed in the lighting circuit to ensure that all floodlights are extinguished between the hours of 9pm and 7am.
4.3 In order to mitigate the impacts of the flood lighting on adjoining residential properties, screen planting may be required.

LPS6 does not have any specific requirements regarding the setback distances for structures on reserved land, however, the scheme objectives for public open space promote the use of recreation buildings and associated facilities to encourage active and passive use of the City's reserves and open spaces.

In consideration of the above criteria, it is considered that the twelve floodlights proposed by this proposal are supported in planning terms as:

- The closest tower is located 30 metres from the nearest residential property to the south along The Strand, and there is no light spill from any of the proposed floodlighting towers;

- The applicant has provided a Light Assessment which has been prepared by a suitably qualified lighting engineer, assessed by the City, and supported on that basis. The lighting report demonstrates that there is no lighting spill onto any of the properties located on The Strand;

- The ability to play tennis and therefore use the reserve to its full potential after dark is supported as being aligned with the Scheme objectives in respect of Open Space reserves;

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- It is recommended that the floodlights are turned off by 9pm. This will align the use with LPP1.16 and LPP3.4. This will still allow the opportunity for tennis to be played for longer durations of the day then currently enjoyed at Appelcross Tennis Club. However, 9pm rather than 10pm is considered acceptable as it allows players and spectators to finish playing and leave the tennis courts before 10pm. This is also consistent with Clause 6.4 of LPP3.4 which states as follows:

  6.4 Subject to public consultation as outlined in Clause 4.3 above, the allowable times for the flood lighting of tennis courts may be increased to 10pm where the amenity of the adjoining residents is safeguarded.

  It is acknowledged that the light from the floodlights if operational until 10pm would not in itself compromise amenity levels for owners and occupiers of the closest residential properties, there being no light spill towards those properties from the floodlights, and there being a substantial separation distance between them. Rather, there is a concern that the activities associated with the end of play, such as the opening and closing of car doors, car engine noise, and conversations between players, have the ability to compromise amenity, particularly if taking place after 10pm when the ambient noise environment for residents is at its quietest. To reduce the hours of operation to 9pm aligns with the concerns expressed by those submitters who oppose the development. As such a condition has been recommended to DBCA outlining this; and

- In view of the above and the conditions recommended to the DBCA, it is considered that any amenity impacts from the proposed floodlighting towers will be effectively managed.

ALTERNATE OPTIONS AND THEIR IMPLICATIONS

It is recommended to Council that the DBCA be advised that the City supports the proposed development subject to the imposition of conditions of approval.

If Elected Members have an alternative view, this may form the recommendation to the DBCA from the City. This will then be taken into account by the DBAC in dealing with the application from then on. It is noted that as the Minister is the final decision maker in this case, the report from the DBCA to the Minister will make reference to the recommendation of the City in respect of this matter.

CONCLUSION

The proposed development is considered to be consistent with the intent and provisions of Local Planning Scheme No. 6, Local Planning Policy 1.16 – Flood and Security Lighting and Local Planning Policy 3.4 – Tennis Courts. The application is recommended for conditional approval to DBCA on that basis.

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At 9:55pm Cr Woodall returned to the meeting.
At 9:55pm Cr Ross left the meeting.

OFFICER RECOMMENDATION (4028) **APPROVAL**

At 9:55pm Cr Fitzgerald moved, seconded Cr Macphail –

That the Council recommends approval to Department of Biodiversity, Conservations and Attractions subject to the following:

Conditions:

1. **All stormwater is to be retained on site in accordance with the approved detailed design plans, to the satisfaction of the Department of Biodiversity, Conservation and Attractions, on advice from the City of Melville.**

2. **All floodlights are to be installed in accordance with AS2560.2.1-2003 and AS4282 (as amended) and are to be hooded such that the light source is not visible from the adjoining residential properties to the satisfaction Department of Biodiversity, Conservation and Attractions, on advice from the City of Melville.**

3. **The flood lights are to be installed with a timer which ensures the lights do not operate between the hours of 9pm and 6am, Monday to Sunday.**

4. **Prior to the floodlights becoming operational, written confirmation from a suitably qualified lighting consultant to confirm that the lighting has been installed in compliance with conditions 2 and 3 above will be required to the satisfaction of Department of Biodiversity, Conservation and Attractions, on advice from the City of Melville.**

Advice Notes:

i. **The *Environmental Protection (Noise) Regulations 1997* must be complied with at all times. These regulations stipulate allowable noise levels which if breached constitute unreasonable noise for the purposes of the *Environmental Protection Act 1986*. These regulations can be obtained from www.slp.wa.gov.au.**

ii. **It is recommended that an updated Environmental Report shall be provided to the Department of Biodiversity, Conservation and Attractions (including a fauna survey) to ensure the proposed development is compliant with all necessary environmental legislation.**

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Amendment

At 9:56pm Cr Spanbroek moved, seconded Cr Woodall –

That the Office Recommendation be amended as follows:

1. **Point 3 to be amended to read:**

   "The floodlights are to be installed with a timer and do not operate outside of the hours of 10pm to 6am Monday to Thursday."

2. **A new Point 4 be inserted to read:**

   "that the application consider retractable lights".

3. **The current Point 4 to be renumbered to Point 5.**

Reason for the Amendment as provided by Cr Spanbroek

1. To allow the Club to hold the Pennants competitions Tuesday to Thursday and for the public to be able to book the courts when they are not being used for Pennants competitions.

2. Noise concerns.

At 9:57pm Cr Ross returned to the meeting.

During discussion and debate on the matter with the consent of the mover and the seconder the amendment wording was altered for clarity.

Amendment

That the Officer Recommendation be amended as follows:

At 9:56pm Cr Spanbroek moved, seconded Cr Woodall –

1. **Point 3 to be amended to read:**

   "The floodlights to be installed with a timer and operate from Sunset to 10pm Tuesday to Thursday or on any other days."

2. **A new Point 4 be inserted to read:**

   "that the application consider retractable lights".

3. **The current Point 4 to be renumbered to Point 5.**

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At 10:08pm the Mayor adjourned the meeting until 6:30pm Wednesday, 19 April 2023.

At the time of adjournment and pursuant to Clause 16.2 of the *City of Melville Local Government (Meeting Procedures) Local Law 2022* it is noted that:

- Cr Fitzgerald moved the Officer Recommendation.
- Cr Macphail seconded the Officer Recommendation.
- Cr Spanbroek moved and spoke to the Amendment.
- Cr Woodall seconded the Amendment.
- Cr Fitzgerald spoke against the Amendment.

MEETING RECOMMENCEMENT

The Presiding Member advised that the Meeting that was adjourned at 10:04pm on Tuesday 18 April 2023 is recommenced at 6:30pm 19 Wednesday 2023 and welcomed everyone back to the meeting.

At the recommencement of the meeting the following Elected Members and officers were in attendance.

Mayor Hon. G Gear

In Attendance

Cr T Fitzgerald (Deputy Mayor)	Palmyra – Melville – Willagee
Cr K Wheatland	Palmyra – Melville – Willagee
Cr N Pazolli	Applecross – Mount Pleasant *(electronic attendance)*
Cr D Macphail *(from 6:43pm)*	Bateman – Kardinya – Murdoch
Cr N Robins	Bateman – Kardinya – Murdoch
Cr G Barber (*until 9:08pm)*	Bicton – Attadale – Alfred Cove *(electronic attendance)*
Cr J Edinger	Bicton – Attadale – Alfred Cove
Cr J Spanbroek	Bull Creek – Leeming
Cr M Woodall	Bull Creek – Leeming *(electronic attendance)*
Cr M Sandford	Central
Cr K Mair	Central

Officers

Mr M Tieleman	Chief Executive Officer
Mr M McCarthy	Director Environment and Infrastructure
Mr G Ponton	A/Director Urban Planning
Ms G Bowman (*until 8.21pm)*	Director Community Development *(electronic attendance)*
Ms C Newman	Head of Governance
Ms R Davis	Governance Officer

At the commencement of the meeting:

Public Gallery	3
Electronic	6
Press	0

Apologies

Cr C Ross	Applecross – Mount Pleasant

On Approved Leave of Absence

Nil.

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See the full report commencing on page 62.

At the time of deferral and pursuant to Clause 16.2 of the *City of Melville Local Government (Meeting Procedures) Local Law 2022* it is noted that:

- Cr Fitzgerald moved the Officer Recommendation
- Cr Macphail seconded the Officer Recommendation
- Cr Spanbroek moved and spoke to the Amendment
- Cr Woodall seconded the Amendment
- Cr Fitzgerald spoke against the Amendment

In resuming debate on this matter, clause 12.11 of the *City of Melville Local Government (Meeting Procedures Local Law 2022* applies:

(1) A Member is not to address the Council more than once on any motion or amendment except-
  (a) as the mover of a motion, to exercise a right of reply; or
  (b) to raise a point of order; or
  (c) to make a personal explanation; or
  (d) subject to clause 10.3, to ask a question.

Amendment

At 9:56pm (at OMC 18 April 2023) Cr Spanbroek moved, seconded Cr Woodall –

That the Office Recommendation be amended as follows:

1. **Point 3 to be amended to read:**

   "The floodlights to be installed with a timer and operate from Sunset to 10pm Tuesday to Thursday and not on any other days."

2. **A new Point 4 be inserted to read:**

   "That the application to consider retractable lights"

3. **The current Point 4 to be renumbered to Point 5.**

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At 6:32pm Cr Spanbroek advised the meeting that a change would be made to the original amendment to reflect the time of 9pm rather than 10pm. The seconder consented to the change.

Amendment

At 9:56pm (at OMC 18 April 2023) Cr Spanbroek moved, seconded Cr Woodall –

That the Office Recommendation be amended as follows:

1. **Point 3 to be amended to read:**

   "The floodlights to be installed with a timer and operate from Sunset to 9pm Tuesday to Thursday and not on any other days."

2. **A new Point 4 be inserted to read:**

   "That the application to consider retractable lights"

3. **The current Point 4 to be renumbered to Point 5.**

At 6:41pm, the Mayor declared the motion

LOST (5/6)

For	5	Cr J Spanbroek, Cr N Robins, Cr T Fitzgerald, Cr M Woodall, Cr G Barber
Against	6	Mayor G Gear, Cr J Edinger, Cr K Wheatland, Cr K Mair, Cr M Sandford, Cr N Pazolli

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At 6:43pm Cr Macphail entered the meeting.

Officer Recommendation

At 9:55pm (18 April 2023) Cr Fitzgerald moved, seconded Cr Macphail –

That the Council recommends approval to Department of Biodiversity, Conservations and Attractions subject to the following:

Conditions:

5. **All stormwater is to be retained on site in accordance with the approved detailed design plans, to the satisfaction of the Department of Biodiversity, Conservation and Attractions, on advice from the City of Melville.**

6. **All floodlights are to be installed in accordance with AS2560.2.1-2003 and AS4282 (as amended) and are to be hooded such that the light source is not visible from the adjoining residential properties to the satisfaction Department of Biodiversity, Conservation and Attractions, on advice from the City of Melville.**

7. **The flood lights are to be installed with a timer which ensures the lights do not operate between the hours of 9pm and 6am, Monday to Sunday.**

8. **Prior to the floodlights becoming operational, written confirmation from a suitably qualified lighting consultant to confirm that the lighting has been installed in compliance with conditions 2 and 3 above will be required to the satisfaction of Department of Biodiversity, Conservation and Attractions, on advice from the City of Melville.**

Advice Notes:

i. **The *Environmental Protection (Noise) Regulations 1997* must be complied with at all times. These regulations stipulate allowable noise levels which if breached constitute unreasonable noise for the purposes of the *Environmental Protection Act 1986*. These regulations can be obtained from www.slp.wa.gov.au.**

ii. **It is recommended that an updated Environmental Report shall be provided to the Department of Biodiversity, Conservation and Attractions (including a fauna survey) to ensure the proposed development is compliant with all necessary environmental legislation.**

At 6:55pm (19 April 2023) the Mayor declared the motion

CARRIED (7/6)

For	6	Cr D Macphail, Mayor G Gear, Cr N Robins, Cr T Fitzgerald, Cr G Barber, Cr M Woodall
Against	6	Cr J Edinger, Cr J Spanbroek, Cr K Wheatland, Cr K Mair, Cr M Sandford, Cr N Pazolli

NOTE: Due to an equality of votes at the Council Meeting, the Presiding Member exercised his right to cast a second vote to reach a decision in this matter (Section 5.21(3) of the *Local Government Act 1995)*

14.2 Reports of the Chief Executive Officer

Items Brought Forward

At 6:42pm, the Presiding Member brought forward item UP24/45 Erection of Floodlights at Applecross Tennis Club for the convenience of those in the public gallery.

6:42pm 20/08/2024 *Cr T Lee having disclosed a proximity interest in Item UP24/45 (detailed in Item 5) left the meeting.*

UP24/45 Erection of Floodlights at Applecross Tennis Club - Lots 260-264 (30) The Strand, Applecross - Submission to the Department of Biodiversity, Conservation and Attractions for Consideration in Making a Determination

File Number:	
Responsible Officer:	Director Planning
Voting Requirements:	Simple Majority
Officer Disclosure of Interest:	DA-2023-30
Application Number:	DA-2023-30
Applicant:	Applecross Tennis Club Inc
Owner:	State of Western Australia (C/- City of Melville)
Proposal:	Erection of Floodlights at Applecross Tennis Club
Attachments:	1. Department of Biodiversity, Conservation and Attractions Draft Report

COUNCIL'S ROLE

Advocacy: When the Council advocates on its own behalf or on behalf of its community to another level of government/body/agency.

SUMMARY

- Approval was sought for the installation of floodlight columns to Courts 11-14 at Applecross Tennis Club (subject site).
- The site is located on land zoned Parks and Recreation under the Metropolitan Region Scheme (MRS). As the subject site is located within the Swan Canning Development Control Area, the Department of Biodiversity, Conservation and Attractions (DBCA) is responsible for assessment of development applications as per Part 5, Section 72(1) of the *Swan and Canning Rivers Management Act 2006*.
- In accordance with the Swan and Canning Rivers Management Act 2006, the Minister for the Environment is the decision maker for Part 5 applications.
- The development application has been referred to the City to provide a recommendation.
- A total of twelve floodlighting towers were proposed, four at a height of 10 metres and eight to a height of eight metres.

- The floodlights for the four courts are now proposed to operate as follows:

  a) Until 10pm from Tuesday to Thursday for League (Pennant) games. Otherwise, floodlights will be switched off at 9pm. Competition games are anticipated to occur for 20 weeks of the year plus a possible extra four weeks if teams make the finals; and

  b) Until 9pm Monday to Sunday when no League (Pennant) games are scheduled. The floodlights for the four courts are proposed to be automatically shut off at 10pm every night to allow for League (Pennant) Tennis to be played up to that time.

- The details of the proposed development were assessed against Local Planning Scheme No. 6 (LPS6), Local Planning Policy 1.16 – Flood and Security Lighting (LPP1.16) and Local Planning Policy 3.4 – Tennis Courts (LPP3.4). It should be noted that these planning documents do not apply to properties reserved under the MRS, however, provide good guidance as to acceptable development standards to maintain the existing and desire amenity of the immediate locality.
- The application was advertised in accordance with the provisions of *Planning and Development (Local Planning Scheme) Regulations 2015* and Local Planning Policy 1.1 Planning Process and Decision Making (LPP1.1) via letters to surrounding landowners and occupiers. Two on site signs were also erected and full details of the proposal were made available on the City's Melville Talks website.
- A total of 145 submissions were received with 13 objections, 131 in support and 1 neither supporting nor objecting to the proposal.
- Details of the proposed development were initially presented to a Development Advisory Unit (DAU) meeting held on 14 March 2023 with an associated report published to the City's website.
- At the Ordinary Meeting of the Council held on the 18th and 19th of April 2023, Council recommended approval to DBCA subject to conditions and advice notes.
- One of the recommended conditions was that the flood lights were to be installed with a timer which ensures the lights do not operate between the hours of 9pm and 6am, Monday to Sunday.
- On 31 July 2024, the City received notification that the draft DBCA report on the above-mentioned proposal has been prepared and released for public comment for a period of 14 days in accordance with Section 75 (4) of the *Swan and Canning Rivers Management Act 2006*.
- Submissions to DBCA are due prior to 15 August 2024 however, the City has been granted until 21 August 2024 to provide its comments on the draft report.
- DBCA's Director General will consider submissions made before the report is finalised and a recommendation made to the Minister for Environment.
- The proposed development, considering the revised lighting design information and environmental noise assessment provided within the DBCA Report is considered to be acceptable when assessed against the relevant policy requirements.
- It is recommended that Council support the draft report prepared by DBCA subject to Condition 5 being amended to align with the condition previously recommended by Council to DBCA recommending that the floodlights are to not operate between the hours of 9pm to 6pm, Monday to Sunday.

OFFICER RECOMMENDATION

At 6:48pm Cr T Fitzgerald moved, seconded Cr K Wheatland

That the Council endorses the draft report prepared by the DBCA subject to requesting that recommended Condition 5 be amended as follows:

> ***The floodlights are to be installed with a timer which ensures the lights do not operate between the hours of 9pm and 6am, Monday to Sunday.***

Amendment

COUNCIL RESOLUTION

At 6:49pm Cr M Woodall moved, seconded Cr N Robins

That the officer recommendation be amended by removing the words:

> ***"The floodlights are to be installed with a timer which ensures the lights do not operate between the hours of 9pm and 6am, Monday to Sunday."***

and inserting:

> ***"The floodlights are to be installed with a timer which ensures that the lights do not operate:***
>
> - ***from 10pm to 6am on Tuesdays to Thursdays when League/Pennants games are scheduled;***
> - ***from 9pm to 6am on Mondays to Saturdays when no League/Pennant games are scheduled;***
> - ***on Sundays and when the courts are not in use."***

At 7:06pm the Presiding Member declared the motion.

CARRIED (8/4)

Yes (8): Mayor Katy Mair, Crs Tomas Fitzgerald, Glynis Barber, Nicole Robins, Karen Wheatland, Matthew Woodall, Soo Hong and Scott Green

No (4): Crs Jane Edinger, Clive Ross, Jennifer Spanbroek and Daniel Lim

Reasons for the Amendment as provided by Cr M Woodall

The current DBCA report recommends that floodlights are installed and allowed to operate until 10pm on Tuesdays to Thursdays during League/Pennant games (approximately 20 weeks per year), and until 9pm at all other times.

The above amendment responds to concerns raised by adjacent residents by eliminating the use of the lights on Sundays (as per the tennis club's offer). It also clarifies that the lights will be turned off when a court is not in use - which is likely to occur reasonably frequently during winter.

This amendment represents a reasonable compromise between the interests of adjacent residents and the wider community's interests in maximising the use of existing sporting facilities. It will bring the Club into line with other tennis clubs in the City of Melville and across the wider Perth metropolitan area.

Substantive Motion As Amended

COUNCIL RESOLUTION (UP24/45)

At 6:48pm, Cr T Fitzgerald moved, seconded Cr K Wheatland

That the Council endorses the draft report prepared by the DBCA subject to requesting that recommended Condition 5 be amended as follows:

The floodlights are to be installed with a timer which ensures that the lights do not operate:

- ***from 10pm to 6am on Tuesdays to Thursdays when League/Pennants games are scheduled;***
- ***from 9pm to 6am on Mondays to Saturdays when no League/Pennant games are scheduled;***
- ***on Sundays and when the courts are not in use.***

At 7:20pm the Presiding Member declared the motion.

CARRIED (8/4)

Yes (8): Mayor Katy Mair, Crs Tomas Fitzgerald, Glynis Barber, Nicole Robins, Karen Wheatland, Matthew Woodall, Soo Hong and Scott Green

No (4): Crs Jane Edinger, Clive Ross, Jennifer Spanbroek and Daniel Lim

PURPOSE

The purpose of this report is for Council to consider the draft report prepared by DBCA which will be presented to the Minister for Environment (the decision maker) as part of the development application consideration process.

Council has the following options available to it in relation to making recommendation on the draft DBCA report:

1. Endorse the draft DBCA report as recommended.
2. Endorse the draft DBCA report with modifications to the recommended conditions.
3. Decide not to consider the draft DBCA report.
4. Substitute the draft DBCA recommendation with a proposed alternative with reasons.

Option 2 is recommended to facilitate an amendment to Condition 5 in the DBCA draft report, to ensure that the floodlights are turned off by 9pm, Monday to Sunday. This will align with the requirements within LPP1.16 and LPP3.4 as well as the recommendation the City provided to DBCA in accordance with the resolution from the April 2023 Ordinary Meeting of Council.

The only changes that have occurred since the application was presented to Council in April 2023 are the preparation of a revised lighting design information report and a revised environmental noise assessment. The number, location and height of the floodlights remains the same as what was previously presented to Council in April 2023. These revised documents have been reviewed by the City and it is considered that any potential amenity impacts from the proposed floodlighting towers can be effectively managed and reinforced by the recommended conditions within the draft DBCA report.

From:	Jennifer Higbid
To:	Jennifer Higbid
Subject:	FW: Request for advice - Applecross Tennis Club
Date:	Tuesday, 23 April 2024 10:01:29 AM

From: Peter Popoff-Asotoff <peter.popoff-asotoff@dwer.wa.gov.au>
Sent: Monday, April 8, 2024 1:34 PM
To: Jennifer Higbid <jennifer.higbid@dbca.wa.gov.au>
Cc: Emma Bridgeman <emma.bridgeman@dwer.wa.gov.au>; Greg Comiskey <greg.comiskey@dbca.wa.gov.au>
Subject: RE: Request for advice - Applecross Tennis Club

Hi Jennifer

After review of the previous two reports (not including the Gabriels Hearne Farrell report as it provided no data):

- *Environmental Noise Assessment - Applecross Tennis Club - 32 The Strand, Applecross* dated 22 February 2023 prepared by Lloyd George Acoustics P/L (LGA report), and
- *Applecross Tennis Club - 32 The Strand Applecross - Environmental Noise Assessment* dated 7 December 2023 (EA report) prepared by EcoAcoustics P/L

the following needed clarification:

- Are shoe-squeaks tonal and/or impulsive at the nearest noise sensitive premises?
- Are ball-hits impulsive at the nearest noise sensitive premises?
- The actual levels of shoe-squeaks and ball-hits at the nearest noise sensitive premises.
- The actual levels of general tennis noise at the nearest noise sensitive premises.

The EcoAcoustics report *Applecross Tennis Club, Response to DWER Request for Additional Information* dated 21 March 2024 (the EA additional report) provides some answers to these questions.

Shoe-squeaks and ball-hits

Chart 1 of the EA additional report provides one-third octave spectral data for close-measured (at 3 m) shoe-squeaks. A potential tone exists in the 2 kHz band, as hinted at in the octave band data of the LGA report. However, as the shoe-squeak noise source is not present for more than 10% of the time the source would not be considered tonal at 3 m under the metrics specified under regulation 9 of the Environmental Protection (Noise) Regulations 1997 (Noise Regulations). At a greater distance the source would be even less tonal and therefore would not be considered tonal at the nearest noise sensitive premises.

While measurements were made of shoe-squeaks and ball-hits at the nearest noise sensitive receivers, only a single parameter was presented in Tables 2 and 3 of the EA additional report, presumably the $L_{Amax\ slow}$ level. The $L_{A\ peak}$ level that is also required by regulation 9 to objectively assess for impulsiveness was not presented, hence no direct objective assessment of impulsiveness was presented for shoe-squeaks and ball-hits noises.

The EA additional report provides measurement levels of evening period background noise in Table 1. While the L_{A01} and L_{A10} parameters provide an indication of the more transient noise sources present, the L_{A90} is the noise level that is exceeded for 90% of the time, hence providing

an indication of the continuous “carpet” of noise that is present. The L_{A90} value is usually referred to as the “background noise level” and in this case is quoted as 39 dB. The level seems reasonable for the time and location while the level of wind is low. However, this level is reported as an “average” L_{A90} value, and from the measured levels of ball-hit noise at times being below this level, it is likely that the background noise level was lower at certain times during the measurement period.

As the EA additional report does not indicate if the measured levels of shoe-squeaks and ball-hits were adjusted for the presence of background noise at the nearest noise sensitive receivers the levels reported in Table 2 and 3 may potentially be an over estimation of the actual levels. The following tables summarise the predicted levels from the LGA report and the EA report, the measured levels from the EA additional report and the measured levels from the EA additional report adjusted for the presence of the assumed background noise. A time history of the measured noise levels would provide a better indication of the background noise levels at the time of the measured shoe-squeaks and ball-hits and hence potentially a more reliable adjustment for background noise.

Level range for shoe-squeak noise received at the nearest noise sensitive premises - dB(A)			
LGA report (predicted)	EA report (predicted)	EA additional report (measured)	EA additional report (measured) adjusted for background
53 to 55	43 to 45	44 to 47	42 to 46

Level range for ball-hit noise received at the nearest noise sensitive premises - dB(A)			
LGA report (predicted)	EA report (predicted)	EA additional report (measured)	EA additional report (measured) adjusted for background
49 to 54	49 to 52	38 to 42	≤39

For a noise source to be considered to be inaudible it would need to be some 10 dB less than the background level, that being the L_{A90}. The L_{A10} and L_{A01} levels represents noise that is only present for short periods of time and therefore are unlikely to consistently mask tennis noise. The tennis noise is therefore likely to be audible at the noise sensitive premises. Given that a limited number of hard surface courts will be operating in the evening period the number of shoe-squeaks occurring will be limited and hence will need to comply with the L_{Amax} assigned level. The number of ball-hits will be more numerous but are short term and hence the L_{A1} or the L_{Amax} assigned levels are likely to more applicable.

The shoe-squeaks were measured adjacent to number 41 The Strand, being a representative residence with the highest assigned levels, and the ball-hits were measured next door at number 43 The Strand being the closest residence with the lowest assigned levels to the synthetic surface court. Assuming that masking is not occurring, and that impulsiveness is present (attracting an adjustment of +10 dB) the following table compares the adjusted shoe-squeaks and ball-hits against the relevant assigned levels.

Noise source	Shoe-squeaks (41 The Strand)	Ball-hits (43 The Strand)	
Measured level adjusted for background [dB(A)]	42 to 46	≤39	
Measured level adjusted for background and impulsiveness [dB(A)]	52 to 56	≤49	
Assigned level parameter	L_{Amax}	L_{Amax}	L_{A1}
Assigned level (evening) [dB(A)]	57	55	50
Exceedance [dB]	-5 to -1	≤-6	≤-1

Note: A zero or negative exceedance implies compliance with the assigned levels.

General tennis noise

No measurement of general tennis noise was made at the nearest noise sensitive premises. As there are no measured levels at the nearest noise sensitive premises to provide direct evidence the predicted levels provide an indication of the levels that may be received. As noted previously, the range of predicted levels of general noise is significantly different between the LGA report and the EA report. EA predicted levels in the range 31 to 38 dB(A) whereas LGA predicted a range of 45 to 49 dB(A) for residences number 37 to 45 The Strand. It is acknowledged that the level of general noise is likely to vary from day to day and might fall within the ranges of both sets of predicted levels, however the EA predicted levels are based on measurements made near to the source at the Applecross Tennis Club and may be more representative of the general noise associated with this club. Both reports viewed the general tennis noise scenario as requiring compliance with the L_{A10} assigned level, with the EA report predicting compliance with the evening L_{A10} assigned level (40 or 42 dB, depending on the receiving premises). If fewer courts were in use, then the general tennis noise would be present less often and potentially would only require compliance with the L_{A1} assigned level (50 or 52 dB, depending on the receiving premises), hence being met even assuming the higher LGA predicted levels.

Note that the L_{A10} and L_{A1} evening assigned levels (for all days) are the same as the L_{A10} and L_{A1} daytime levels for Sundays and public holidays. The impact of noise from only courts 11, 12, 13 and 14 would be less than noise from all the courts that could potentially be operating currently on Sundays and public holidays. Given that the background noise level (L_{A90}) is in the range of 39 dB(A) the general tennis noise as predicted by EA, while audible, would be difficult to measure at the nearest noise sensitive premises.

Conclusion

Shoe-squeaks and ball-hit noise from courts 11, 12, 13 and 14 are likely to comply with the assigned levels in the Noise Regulations during the evening period. General tennis noise from courts 11, 12, 13 and 14 has a potential to comply with the Noise Regulations during the evening period.

Mitigation measures, if required, are limited, but could include time restrictions, restrictions on the number of courts used, restriction of shoe types or alternative surface material to reduce

squeaks on the hard courts. Solid physical barriers are possible for mitigation of noise generally but may need to be quite high as some of the noise sensitive premises along The Strand are three storeys high. Given the location, tall physical barriers may not be an acceptable option.

Regards

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From: Peter Popoff-Asotoff <peter.popoff-asotoff@dwer.wa.gov.au>
Sent: Friday, January 19, 2024 5:53 PM
To: Jennifer Higbid <jennifer.higbid@dbca.wa.gov.au>
Cc: Emma Bridgeman <emma.bridgeman@dwer.wa.gov.au>; Greg Comiskey <greg.comiskey@dbca.wa.gov.au>
Subject: RE: Request for advice - Applecross Tennis Club

Hi Jennifer

I see where the problem came from. The letter back to the applicant has this phrase:

"…the report should include noise measurements modelled from the tennis activity on courts 11, 12, 13 and 14 to demonstrate the existing and predicted noise levels, and compliance with the Regulations."

It is a bit hard to understand quite what that phrase means: is measurement (at the receiver) required or is modelling required? One doesn't produce measurements from a model. If doing modelling, some measurements are required near to the source to develop source sound power levels to insert into a model. The phrase does have the word "modelled" in it, so modelling is what EcoAcoustics (EA) did. However, that is not what I was suggesting.

Modelling is usually done in the situation where the source does not already exist, in this case it does. Modelling this type of noise source is difficult and if there is actual noise coming from an existing source it is better to measure the level being received then to try and model it. In some cases it may be difficult to measure at the receiver because of other interfering noise, and this may be the case here, but that is what the brief should have been: to measure noise from tennis activity on courts 11, 12, 13 and 14 at the most affected residents to assess for compliance with the noise regulations. If you can't measure the noise then you might have to default to modelling to give some indication that the noise (that may not audible) might be technically complying or not, but that has already been done by Lloyd George Acoustics (LGA).

The differences in the EA modelled results and the LGA report modelled results point to some of the problems with modelling these types of sources. While the results of the modelling, in some cases, are surprisingly consistent, in other cases they do not line up. Both consultants did measurements near the sources to determine sound power levels of different activities, these were then (presumably, in one case) used to predict levels at the residents. The difference here is that EA did not report on the sound power levels (and type of source – i.e. point or area) that they used for modelling, whereas LGA did. It is then difficult to make any determination regarding the validity of the modelling results.

One of the reasons for doing direct measurements (at the receivers) is that the presence, or not, of annoying characteristics (tonality or impulsiveness, in this case) associated with any of the sources can be better determined. Measurements made close to the source, at the time of gathering information from which to calculate sound power levels, may indicate that a source may be tonal or impulsive in the near-field, but what is not known is if it would still retain those characteristics at a distance. This is because atmospheric conditions and meteorological conditions have an effect on the transmission of sound over larger distances. LGA considered that the characteristics that were present in the near-field would still be present further away at the receiver, while EA assumed that they would not. This makes a big difference in the levels when compared to the assigned levels as those characteristics attract dB penalties (+5 dB for tonality and + 10 dB for impulsiveness, these being additive) under the Noise Regulations.

There was also difference in the assigned level parameter that the consultants chose that the different sources would need to be assesses at. For instance, EA considered that the ball-hit noise should be assesses against the LAmax assigned level criteria, but LGA considered that the ball-hit noise should be assessed against the lower LA1 assigned level criteria. This is because LGA considered that there was sufficient amount of ball hitting noise present that it would be there for at least 1% of the time.

There may be something gained by comparing the predicted levels of the different sources that the two consultants modelled:

For ball-hits received at residences number 37 to 45 The Strand, EA predicted levels in the range 49 to 52 dB(A) whereas LGA predicted a range of 49 to 54 dB(A) for those residences. These results are gratifyingly similar, however LGA assumed that they were impulsive (attracting +10 dB adjustment) and also should be assessed against the more stringent LA1 assigned level, whereas EA assumed it was not impulsive and only need to be assessed against the higher level LAmax criteria.

However, for the shoe-squeaks EA predicted levels in the range 43 to 45 dB(A) whereas LGA predicted a range of 53 to 55 dB(A) for residences number 37 to 45 The Strand. This is a big difference. Given the LGA sound power level their modelled results seem reasonable, I can't comment on the EA levels. Both agreed that the shoe-squeak events are rare enough to only need to be assessed against the LAmax assigned level. However LGA assumed that they retained the tonal and impulsive characteristics at the residences, hence attracting a +15 dB adjustment. EA assumed no characteristics would be present at the receiver location.

Similarly for "general" tennis match noise, EA predicted levels in the range 31 to 38 dB(A) whereas LGA predicted a range of 45 to 49 dB(A) for residences number 37 to 45 The Strand.

Once again, a big difference. And once again, given the LGA sound power level their modelled results seem reasonable, and I once again can't comment on the EA levels.

This is what can we glean from these two reports:

- If shoe-squeaks are not tonal and impulsive, they will comply with the LAmax.
- If ball-hits are not impulsive they will comply with an LAmax. However if the ball-hits are frequent enough to be present for more than 1% of the time then it is possible that they will not comply with the LA1.
- The general tennis noise level is not considered to have any intrusive characteristics but still may or may not exceed the LA10 assigned level.
- Groaning noises from players will comply (from the LGA report).

LGA did assess noise from car doors closing while being parked in the car park area, these will comply with the LAmax assigned level. It is agreed that as the car park is on the road reserve the noise from the propulsion and braking system of the vehicles is exempt from complying with the Noise Regulations. LGA also assessed persons talking near the cars and showed that it would also comply.

It could be argued that the intrusive characteristics are inaudible because of masking by background noise. This would require logging of the background noise at a location representative of the residents. EA did do some ambient noise monitoring (see section 3.2), unfortunately it appears that the measurements were made near the (tennis court) site, so we don't know if they are representative of the background levels near the resident. Measurements were also made by EA near the residents (see Table 4.2) when the noise from the tennis club was inaudible, however no LA90 level was reported and it was only for 15-minute periods, presumably during the day time. The LA90 parameter of measurements done in the evening is what you would need to use to assess if masking of characteristics is possible during evening periods.

There is a contradiction in the EA report (see my comments in my previous email) which indicates that at least maximum levels from "short duration events" were able to be measured, unfortunately they were not reported to help verify the predicted levels.

A way forward is to measure the levels received at the residence of activities on courts 11 to 14 to verify the predicted levels, or at least to give an indication of whether they are in the right ballpark. Background noise levels at the residences should be measured in the evening period. The tennis court measurements would best be made in the evening too. The worst-case receiver is number 45 The Strand, measurement near that location would likely provide the best measurable tennis levels.

If the City wishes to undertake the measurements DWER can assist in design and analysis. Please feel free to call me to discuss.

I hope that helps.

Regards

Peter Popoff-Asotoff

Principal Environmental Officer (Noise)
Environmental Noise

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From: Peter Popoff-Asotoff <peter.popoff-asotoff@dwer.wa.gov.au>
Sent: Tuesday, January 16, 2024 12:39 PM
To: Jennifer Higbid <jennifer.higbid@dbca.wa.gov.au>
Cc: Greg Comiskey <greg.comiskey@dbca.wa.gov.au>; Emma Bridgeman <emma.bridgeman@dwer.wa.gov.au>
Subject: RE: Request for advice - Applecross Tennis Club

Hi Jennifer

Do you know what the brief was for EcoAcoustics?

My previous comment on the 22 February 2023 Lloyd George Acoustics report that used modelling was that "As the tennis courts already exist and are operating, it is suggested that direct measurements be made of tennis activity…". It was intended that measurements of existing activity could be made directly at the receiver, as relying on predicted levels from sources such as tennis courts are problematic, as they are difficult to describe and model.

EcoAcoustics did some measurements "at a number of locations representative of the nearest noise sensitive receivers", however these were three 15-minute measurements without identifying any levels associated with tennis activities. The reasons were that noise from tennis was not discernible/generally not discernible/inaudible above background (Table 4.2). However, they also state: "Measurements of short duration events were taken at a location representative of the nearby residents. At this distance, the difference between L_{Apeak} and $L_{A\ slow\ max}$ was less than 15 dB for individual short duration events." (Section 5.2). On the face of it, these are conflicting statements. The EcoAcoustics report once again relies on modelling to show compliance, when more time should have been spent trying to obtain real noise levels at the residence.

I can supply other comments on the EcoAcoustics report but the main reason for revisiting the issue has not been addressed.

Feel free to give me a call if you need to discuss this further.

Regards

Peter Popoff-Asotoff
Principal Environmental Officer (Noise)
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From: Peter Popoff-Asotoff <peter.popoff-asotoff@dwer.wa.gov.au>
Sent: Friday, April 14, 2023 5:50 PM
To: Jennifer Higbid <jennifer.higbid@dbca.wa.gov.au>
Cc: Greg Comiskey <greg.comiskey@dbca.wa.gov.au>; Emma Bridgeman <emma.bridgeman@dwer.wa.gov.au>
Subject: RE: Request for advice - Applecross Tennis Club

Hi Jennifer

I note that distributed quasi-random noise sources such as from tennis courts are difficult to assess, as they are difficult to describe and model. The following are my comments on the two acoustic reports you provided:

Gabriels Hearne Farrell Report

The exemptions for community noise under regulation 16 of the *Environmental Protection (Noise) Regulations 1997* (Regulations) applies to the definitions of "community noise" as listed in Schedule 2 of the Regulations. The two items in Schedule 2 potentially relevant to the noise from tennis courts are:

1. Noise emitted by spectators at a sporting activity that is —
(a) arranged by a sporting organization; or
(b) conducted at a sporting venue; or
(c) advertised prior to the conduct of the event.
and/or
4. Noise emitted as a consequence of a recreational or educational activity from premises occupied for educational purposes if the activity —
(a) is conducted under the control of the occupier of the premises; and
(b) does not include the use of mechanical equipment other than musical instruments.

While it is clear that the noise from *spectators* at a sporting activity is exempt (subject to the three conditions) under item 1, it does not include the noise generated by the sport itself, including from equipment, the players or referees and the like. The Gabriels Hearne Farrell Pty Ltd (Gabriels) report however considered that there was an exemption by referring to the fourth item of Schedule 2. While some aspect of education may occur at the tennis club, it would be a stretch to say that it is a "premises occupied for educational purposes" as education is not the main activity of the club. This item in the Schedule generally refers to the noise from sporting activities at schools and the like.

As there is no exemption for the noise generated by the sport itself, the noise is to comply with the assigned levels under the Regulations.

It would be true that the level of noise generated by the playing of sport at the tennis club in the evening and at night would be the same as that during the daytime, providing all other elements remain the same. This would include no change in the number of courts operating at any point in time and no change in the physical layout and components of the facilities. Gabriels are partially correct in stating that the assigned levels for day time on Sundays and Public Holidays are the same as for evening periods, however this only applies to the L_{A10} and the L_{A1} parameters. The noise associated with tennis is relatively sparce and hence is more likely to require compliance with the L_{Amax} assigned levels which are 10 dB less during the evening and night periods compared to the daytime period for all days.

Lloyd George Acoustics Report

The review of the Gabriels report presented in section 2 of the Lloyd George Acoustics (LGA) report seems correct.

The assigned levels calculated in section 3.1 appear correct and has correctly identified the +2 dB adjustment due to some noise sensitive premises being within 100 m of the clubroom as required by Schedule 3(2)(8) of the Regulations. Note that the assigned levels apply to all the areas defined a *highly sensitive area* under the Regulations, this is the area on the residential receiver premises within 15 m of the house. While some of the residents fronting on to The Strand have the building facades at distances of more than 15 m from the from the property boundary assessment at a point 1 m from the building façade is a practical approach, even though the assigned level is to be met at any location that is a *highly sensitive area,* hence at a locations that may be some 14 m closer to the tennis club. At the façade locations the reduction of 2 dB from the predicted levels is accepted if the prediction software includes the effect of reflections in the algorithm (this however is not stated).

While the methodology in the LGA report is generally sound there are difficulties associated with defining the noise levels associated with sources relating to sports such as tennis.

Prediction algorithms require that the sound power levels (SWLs) of the noise sources be defined. In the LGA report the SWLs of tennis activity were calculated from measurements made at tennis courts at another tennis club (Alexander Park). The measurements were made at two locations at Alexander Park, one at a distance of 6 m from the enclosing fence of a court located to the west and one at a distance of 5 m from the enclosing fence of a court located to the east. Three courts appear to have been active during the measurements, two near the western measurement location and one near the eastern location. From Google maps it appears that the active courts during measurement all have surfaces which are not natural grass, hence potentially and presumably a harder “cushioned hard surface”.

SWL calculations require that the distance of the source from its measurement location be known. In the case of these measurements the potential locations for the noise sources (ball hits, grunts, shoe-squeaks) may have originated over a distance of roughly ranging from 10 m to 49 m away from the western court measurement location and roughly ranging from 9 m to 47 m from the eastern court measurement location. Unless the location is precisely known, for point sources the calculated SWLs could vary by some 15 dB. From the SWLs and the maximum sound pressure levels (SPLs) of two sources that can be gleaned from the LGA report: the groan and

shoe-squeak, it appears that the distances to the sources may have been approximately 14 m and 18 m. This puts the source location somewhere near the baseline of the nearest court and appears reasonable. However, if the actual locations were further away the SWLs would be underestimated, and if closer, overestimated. The SWLs associated with other court located noise sources have the same issue.

With the maximum SPL associated with a racquet hitting a ball at 59.2 dB(A) it is unsure what the measured L_{A1} statistical levels presented in section 4.2.4 represent, as the L_{A1} levels are a higher level for both courts. This is of particular interest as the L_{A1} levels have been adjusted for the presence of impulsiveness as stated in section 5.2.

The test for the presence of the impulsive characteristic under r.9 of the Regulations requires the calculation of the difference between the L_{Amax} and the L_{Apeak} values of a "single representative event". This data associated with single representative events have not been provided in the report. Hence while the levels measured at a location 5 or 6 m away from the court fencing may result in a positive test for impulsiveness there is no way to be certain if the measured levels would retain the impulsive characteristic at further distances. Generally the difference between the L_{Amax} and L_{Apeak} values decreases with distance, hence reducing the possibility of being impulsive. The nearest residential façade (at 45 The Strand) to courts 11 and 12 are some 33 m away and to courts 13 and 14 (at 39A The Strand) some 62 m away. At the furthest assessed location (at 29 The Strand) the distance from courts 13 and 14 is approximately 83 m away and from courts 11 and 12 is approximately 100 m away.

A similar potential issue is present in the test for tonality (as identified to be present in shoe-squeaks). While the source may be identified as being tonal near the source it may not be at further distances. Spectral data would provide an indication of how tonal the source is and background noise levels at the receiving locations would provide an indication if the tonality might be masked at a distance.

The LGA report does not mention if the predicted levels were verified against the measured level locations, this would give some more certainty regarding the predicted levels received at the residents. This, in particular, is important with the prediction of noise emanating from courts 11 and 12 which are synthetic grass courts, for which the SWLs may not be well represented by levels obtained from what may have been a "cushioned hard surface" court.

Assuming that the sources do not contain annoying characteristics such as impulsiveness or tonality, the L_{Amax} assigned levels would be met (from Table 5-1) and the L_{A1} levels would be met at all but 43 and 45 The Strand (from Table 5-2). Table 5-3 however, which does not include adjustments for annoying characteristics, shows exceedances of the L_{A10} assigned level at 6 of the 9 assessed receivers. Given that the exceedances are between +3 and +9 dB it may indicate potential noncompliance given some variance in the estimation of the SWL. This is however complicated by the L_{A10} source being modelled as an area source with a SWL of 95 dB(A). It is unsure if this L_{A10} model correctly describes the noise source, again there is no indication of verification of the model against the measured levels.

Comment

As the tennis courts already exist and are operating, it is suggested that direct measurements be made of tennis activity on the courts that are intended to be operating during the evening period (courts 11 to 14). This can be done during the daytime, along with some background noise measurements in the evening to indicate the possibility of masking of annoying characteristics.

I hope that helps. Please give me a call if you need to discuss it further.

Regards

Peter Popoff-Asotoff
Principal Environmental Officer (Noise)
Environmental Noise

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ATTACHMENT 1B

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Monday, 24 October 2022

Paul Logothetis
Applecross Tennis Club
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Applecross, WA, 6153

RE: TENNIS WEST LETTER OF SUPPORT

Tennis West fully supports the initiative of Applecross Tennis Club to install floodlights onto their four acrylic courts. They are the only affiliated tennis club in metropolitan Perth that does not have lights on their acrylic/synthetic courts.

The Tennis West Strategic Facilities Plan provides clear direction and priorities for the future planning and development of tennis facilities in Western Australia. The plan aims to address the current issues and challenges experienced by tennis providers and facility owners and delivers a framework for growing tennis participation through the prioritisation and future provision of quality, accessible and sustainable tennis facilities.

The project proposed by Applecross Tennis Club will align to one of the four strategic priorities, which are key to the successful and sustainable development of facilities.

Priority 2. Enhancing venue capacity

Additional floodlighting is required at strategic locations to support the demand for night tennis.

Tennis West has acknowledged that Applecross Tennis Club has worked closely with the City of Melville and the State Government on their Tennis Development Strategy.

Applecross Tennis Club have been affiliated with Tennis West for many years and we expect the club's affiliation to continue.

Yours sincerely

Olivia Birkett
Head of Operations
Tennis West

Summary of public submissions – Part 5 application for Applecross Tennis Club (ATC) (2022/2563)

Issue	DBCA response
SUPPORT	
Will allow members to play tennis after work hours.	Noted.
Benefits to community health and wellbeing from increased participation in sport.	Consistent with the *Swan Canning River Protection Strategy.*
Will allow competition games (League tennis).	Noted
Brings ATC in line with all other tennis clubs in Perth as it is the only club without lights.	Noted.
Night tennis will reduce sun exposure for players during summer.	Noted.
One of the oldest tennis clubs in Perth and established prior to the majority of residential development in the area.	Noted.
Potential to improve membership numbers and viability of ATC.	Noted.
Benefits of playing in cooler temperatures at night in summer.	Noted.
Community benefit should outweigh the view of a small number of individual residents.	Noted.
Will provide more amenities to accommodate the increased numbers of residents in the City.	Noted.
OBJECTIONS	
Lighting	
Light poles will be visually intrusive and will degrade the landscape and scenic values for the community.	It is acknowledged that the poles will be visible to some residents. The narrow poles (300mm at base tapering to 90mm at top of pole) are not considered to be obtrusive structures. The lighting design has adequately mitigated the risk of glare and light spill. The lighting poles and lights will not significantly diminish the quality of views for residents within the locality.

Issue	**DBCA response**
High intensity lighting from the courts will adversely impact residents.	The proposed lighting design is compliant with Australian Standard AS/NZS4282:2023 *Control of the obtrusive effects of outdoor lighting*. The applicant has provided information to demonstrate that there will be no light spill (0 lux) to the property line along The Strand and has proposed appropriate lighting design to manage glare and disturbance to residents. The proposed lighting is not considered to present a significant adverse impact to the amenity values of local residents.
Noise	
Noise impacts from night tennis and associated activities will impact residents and may contravene the Environmental Protection (Noise) Regulations 1997.	The lighting proposal is an intensification of use at the site into hours in the evening that are not currently available. The Department of Water and Environmental Regulation has indicated that the proposal is unlikely to generate noise levels that will result in a significant adverse impact on the amenity of the nearby residents.
There have been numerous complaints from local residents to the City about noise levels from ATC.	The City of Melville has advised that there was a noise complaint a few years ago in regard to an event at ATC, and there was a recent complaint about an alarm at the site.
Environmental	
Potential impacts to fauna from lighting and noise.	The lighting information provided by the applicant has demonstrated that there will be no light spill to the vegetation along the foreshore or in the river. The proposal is unlikely to have a significant impact on fauna considering the limited and sporadic nature of noise and the proposed mitigation of light spill.
The proposal should be referred under the *Environment Protection and Biodiversity Conservation Act 1999* to the Commonwealth Department of Climate Change, Energy, the Environment and Water in regard to potential impacts on matters of national environmental significance.	DBCA has reviewed the proposal in consideration of the statutory requirements under the *Biodiversity Conservation Act 2016* (BC Act). The lighting design proposed will not result in light spill to the foreshore vegetation and river, and does not present a significant risk to wildlife. The proposal is not considered to require a section 40 authorisation under the BC Act.

Issue	DBCA response
	Third parties can refer proposals under the *Environment Protection and Biodiversity Conservation Act 1999* to the Department of Climate Change, Energy, the Environment and Water.
Lighting does not comply with Australian Standard 4282 in regard to the foreshore vegetation.	Since the initial advertising of the application, the applicant has submitted revised lighting information. The lighting information from Musco complies with Australian Standard AS/NZS4282:2023 *Control of the obtrusive effects of outdoor lighting* and is predicted to result in no light spill (0 lux) to the foreshore vegetation and river.
A geotechnical report has not been undertaken for excavation of the light pole footings and potential interaction with the water table.	Any dewatering required during construction must be authorised by DBCA prior to commencement and be consistent with DBCA Corporate Policy 50 *Planning for dewatering affecting the Swan Canning Development Control Area.*
General amenity	
ATC has inadequate parking facilities and additional vehicles will cause verge damage and impact amenity for residents at night. And A traffic impact study has not been undertaken.	The proposal currently relies on parking provision within the adjoining road reserve. Current parking available along the frontage is approximately 56 perpendicular bays. It is considered that the existing parking is adequate to accommodate evening patronage of the four lit courts. A more detailed parking assessment is not warranted in this instance.
The applicant has not adequately demonstrated that the proposal should be approved and has not discussed the potential impact to local residents' amenity.	Based on assessment of the information provided with the application including lighting, noise and operational details, it is able to be determines that the proposal will not unreasonably affect the amenity of the local area and residents within the local area.
The proposal is not consistent with the river setting and will detract from the amenity values of the Riverpark.	The Riverpark is used for a range of recreational activities and appropriate development can be successfully integrated into foreshore reserves to support the community benefits without adversely impacting amenity values. ATC has been long established at this location.

Issue	DBCA response
Planning	
The proposal is inconsistent with Development Control Policy 1.2, *Swan and Canning Rivers Management Act 2006*, State Planning Policy 2.10, DBCA Corporate Policies 42 and 45, Visual Landscaping Planning in WA manual, Draft State Planning Policy 2.9 and Development Control Policy 5.3.	DBCA has considered the matters raised within the relevant planning policies and is satisfied that the proposal does not prejudice the matters identified within.
Installation of lighting is contrary to the City's Local Planning Strategy objectives CP-061 and CP-058 regarding lighting and tennis court developments adjacent to residential areas.	The application is being assessed pursuant to the *Swan and Canning Rivers Management Act 2006.* In assessment of an application, DBCA requires that lighting should be designed to minimise light spill so that fauna, community enjoyment and visual amenity are not unacceptably affected. All lighting is expected to be consistent with the *National Light Pollution Guidelines for Wildlife* (Department of Climate Change, Energy, the Environment and Water, 2023) and AS/NZS4282 *Control of the Obtrusive Effects of Outdoor Lighting*. Further, light spill to the river and within habitat areas should be no more than 0.01-0.03 lux (moonlight), where possible, to ensure no adverse ecological consequences. Advice from the City of Melville has been considered in regard to compliance with relevant policies. The City of Melville has advised that it supports the proposal subject to restriction of hours of operation.
Inconsistent with the City of Melville's *Local Planning Policy – Flood and Security Lighting* (LPP1.16).	The application is being assessed pursuant to the *Swan and Canning Rivers Management Act 2006.* Advice from the City of Melville has been considered in regard to compliance with relevant policies. The City of Melville has advised that it supports the proposal subject to restriction of hours of operation.
Aboriginal consultation has not been undertaken	The site is not within a registered Aboriginal Heritage Place. Further, all works are subject to the requirements of the *Aboriginal Heritage Act 1972.*

Issue	**DBCA response**
The 'Application for building permit – certified' form (BA1) should have acknowledged the currency of a Supreme Court injunction in regard to Section 6 – item 5.	This matter is not relevant to the determination of this application under the *Swan and Canning Rivers Management Act 2006.*
Premature for the City's CEO to support the Part 5 application without a resolution of Council and prior to determination of the City's Tennis Strategy.	On 19 April 23, Council resolved that DBCA should recommend the application for approval.
The previous application to replace grass courts with hard/synthetic courts should have been a Part 5 development application under the *Swan and Canning Rivers Management Act 2006* and not a permit under the Swan and Canning Rivers Management Regulations 2007.	DBCA issued a permit to ATC in 2020 for the replacement of four grass courts with synthetic/hard surfaces, installation of stormwater infrastructure and the installation of lighting. Following orders by the Supreme Court, the lighting component was removed from the works that had been approved.
Inconsistent with the intent of the MRS (benefits the membership of a private club).	*Development Control Policy 5.3 – Use of Land Reserved for Parks and Recreation and Regional Open Space* (Western Australian Planning Commission, 2017) permits incorporated sporting clubs to locate on lands reserved for Parks and Recreation. Lot 264 is owned freehold by the City of Melville and leased to ATC, which has been long established at this location. The general public can book tennis courts at ATC and hire the facilities.
Planning approval under the City of Melville Local Planning Scheme No. 6 is required in regard to parking.	This application does not include an upgrade to the parking facilities. The road reserve is outside the Swan Canning Development Control Area.
Other	
The Form 1 submitted is not a valid application in regard to the applicant's signature and appropriate delegation.	The minutes of the ATC committee meeting on Monday 16 August 2022 provide a resolution for one of the Committee members to submit the application on behalf of the ATC. The application is considered valid.
BA1 form under the *Building Act 2011* has been submitted without planning approval.	Not relevant to the determination of this application under the *Swan and Canning Rivers Management Act 2006.*

Issue	DBCA response
The existing courts are underutilised and the applicant has not demonstrated an identified demand for night tennis.	The proposal adequately demonstrates demand for the proposed activity by clarification that the facility is required for weekly competition and for hire to the surrounding community.
There are ample existing flood lit tennis courts available in the City to meet demand.	The proposal is not of a scale or intensity that warrants justification based an assessment of demand beyond the existing evidence provided in the application that demonstrates that the courts will be utilised for weekly competition and for hire to the surrounding community.
Potential for lighting to impact navigational safety at night for watercraft users of the river.	Considering the shallow nature of the river in this location, it is unlikely that vessels will be operating close to shore in the evening. In addition, the proposal contains light spill and glare to the site and will not result in navigation safety issues for vessels.

Summary of public submissions on the draft report – Part 5 application for Applecross Tennis Club (ATC) (2022/2563)

Issue	DBCA response
SUPPORT	
Will allow members to play tennis after work hours.	Noted.
Benefits to community health and wellbeing from increased participation in sport.	Consistent with the *Swan Canning River Protection Strategy.*
Will allow competition games (League tennis).	Noted.
Brings ATC in line with all other tennis clubs in Perth as it is the only club without lights.	Noted.
Night tennis will reduce sun exposure for players during summer.	Noted.
One of the oldest tennis clubs in Perth and established prior to the majority of residential development in the area.	Noted.
Potential to improve membership numbers and viability of ATC.	Noted.
Benefits of playing in cooler temperatures at night in summer.	Noted.
Community benefit in providing increased recreational and sporting opportunities for members and the public.	Noted.
Will provide more amenities to accommodate the increased numbers of residents in the City.	Noted.
The lighting has been designed to reduce impacts to the environment and residents.	Noted.
Will provide improved use of the existing facilities.	Noted.

Issue	DBCA response
OBJECTIONS	
Lighting	
Lighting and poles will adversely impact the landscape and amenity values for the community.	The narrow light poles (300mm at base and tapering to 90mm at top of pole) are not considered to be visually obtrusive structures and will not dominate or block river views. The lighting design has adequately mitigated the risk of glare and light spill. The lighting poles and lights are not expected to significantly diminish the quality of views for residents within the locality.
Lighting from the courts will adversely impact residents as a result of light spill and glare.	The proposed lighting design is compliant with Australian Standard AS/NZS4282:2023 *Control of the obtrusive effects of outdoor lighting*. The applicant has provided information to demonstrate that there will be no light spill (0 lux) to the property line along The Strand and has proposed appropriate lighting design to manage glare and disturbance to residents. The proposed lighting is not considered to present a significant adverse impact to the amenity values of local residents.
Noise	
Noise impacts from night tennis and associated activities, including traffic, will impact residents and may contravene the Environmental Protection (Noise) Regulations 1997.	It is noted that the lighting proposal is an intensification of use at the site into hours in the evening that are not currently available. However the Department of Water and Environmental Regulation has indicated that the proposal is unlikely to generate noise levels that will result in a significant adverse impact on the amenity of the nearby residents.
Noise and disturbance from ATC may extend to midnight.	Lights will be turned off automatically no later than 10pm on three nights of the week (Tuesday, Wednesday and Thursday) when competition games are scheduled, which is for a maximum of 24 weeks of the year.
Environmental	
Potential environmental impacts, particularly fauna, from lighting and noise.	The lighting information provided by the applicant has demonstrated that there will be no light spill to the vegetation along the foreshore or in the river. The proposal is unlikely to have a significant impact on fauna considering the limited and sporadic nature of noise and the proposed mitigation of light spill.

Issue	DBCA response
Amenity	
Amenity impacts have not been adequately assessed.	DBCA has considered the potential amenity impacts relating to noise, light and visual intrusion from the lighting structures. ATC is an existing recreational facility located in a Parks and Recreation reserve and DBCA considers that the degree of amenity impact from the proposal is not significant. It should be noted that other similar recreational facilities with lighting currently operate within the Swan Canning Riverpark.
ATC has inadequate parking facilities and a traffic study has not been undertaken.	Current parking along The Strand comprises approximately 56 perpendicular bays, which is considered sufficient to accommodate night games on the four lit courts. Refer to section 7.18 of the report.
The proposal is not consistent with the river setting and will detract from the amenity values of the Riverpark.	The Riverpark is used for a range of recreational activities and appropriate development can be successfully integrated into foreshore reserves to support the community benefits without adversely impacting amenity values. ATC has been long established at this location.
Planning	
City of Melville incorrectly identified ATC as zoned Public Open Space under Local Planning Scheme No.6.	Noted. This does not impact on the consideration of DBCA under the *Swan and Canning Rivers Management Act 2006*.
The development site is subject to the provisions of the City of Melville's Local Planning Scheme No.6.	The proposal is not subject to the provisions of LPS No.6.
The provisions of the Metropolitan Region Scheme have not been considered.	The application is being assessed pursuant to the *Swan and Canning Rivers Management Act 2006.* DBCA has given due regard to the MRS including the reservation under the MRS for Parks and Recreation.
The proposal is a relevant planning consideration to be taken into account under the 'Deemed Provisions' of the Planning and Development (Local Planning Schemes) Regulations 2005.	The 'Deemed Provisions' do not apply to decisions regarding reserved land under the Metropolitan Region Scheme or decisions made under the *Swan and Canning Rivers Management Act 2006*.
A visual impact assessment has not been undertaken.	Consideration of visual impact has been given to the proposal. The proposed light poles are narrow and are not considered to be visually obtrusive structures. There are existing recreational facilities with lighting towers located within the

Issue	DBCA response
	Riverpark that provide examples of the extent of visual impact that would be expected at ATC. DBCA does not consider that the bulk, scale and style of this proposed development warrants a visual impact assessment to be undertaken. Refer to sections 7.25 and 7.26 of the report.
Consent from the Minister for Lands is required in respect to using the road reserve for night parking.	The Strand is an access road under the local road hierarchy and is within the control of the City of Melville. The City of Melville has provided authority for lodgement of the application.
Other	
The consultants reports that were submitted on behalf of a local resident have not been adequately considered by DBCA.	DBCA has reviewed the consultants reports that were submitted in 2023. It should be noted that the reports were in regard to the information provided by ATC in the original development application. The reports raised valid concerns and as a result, ATC has since provided revised lighting and acoustic information. Refer to section 6.8 of the report.
The existing courts are underutilised and there are ample existing flood lit tennis courts available in the City to meet demand.	The proposal adequately demonstrates demand for the proposed activity by clarification that the facility is required for weekly competition and for hire to the surrounding community.
Lighting until 10pm for seven nights a week is excessive.	The proposal is to light four courts to 10pm on three nights of the week (Tuesday, Wednesday and Thursday) when competition games are scheduled, which is for a maximum of 24 weeks of the year. Lights will not be operated on Sundays.

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24 January 2024

Applecross Tennis Club Ltd
32 The Strand
Applecross WA 6153

Illumination Design Summary Report

The following report is to be read in conjunction with the Musco supplied document 230428_B.pdf lighting design, as an explanatory document to supplement the lighting design proposed for Applecross Tennis Club for Courts 11, 12, 13 and 14.

Design Brief:

The technical brief received was to light Courts 11 and 12, and Courts 13 and 14 to meet the AS 2560:2.1 requirements for competition tennis as per the below:

TABLE 1

LIGHTING CRITERIA

Level of play	Maintained horizontal illuminance* $E_{h\ maint}$		Minimum horizontal uniformities†				Maximum Glare rating GR_{max}	Minimum Colour Rendering Index $R_{a\ min}$
	PPA	TPA	PPA		TPA			
			U_{1min}	U_{2min}	U_{1min}	U_{2min}		
Recreational and residential ‡	250	150	0.6	0.3	0.2	0.1	50	20
Club competition and commercial	350	250	0.6	0.4	0.3	0.2	50	65
International and national	1000	800	0.7	0.5	0.5	0.3	50	65

Additionally, the design must comply with AS 4282:2023 Zone A3 Medium District Brightness requirements for the control of effects of obtrusive light (also known as spill light), and the requirement for no more than 0.2lx on the Swan River, the design brief in controlling spill light to ensure there is no light from the tennis courts reaching the river.

Descriptive Summary of Results

The descriptive summary will reference the Grid Summary label on each page of the design for reconciliation of the descriptive summary to the design document. The page references will reconcile with the PDF page numbering.

The values summarized below are in compliance with AS 2560 Table 1 above.

1 Tennis #13 PPA – Page 2 – Shows the results for the PPA columns on Table 1 above for Court 13. This shows an average light level of 356lx, Min/Avg (U1) of 0.74 and Min/Max (U2) of 0.58.

2 Tennis #13 TPA – Page 3 – Shows the results for the TPA columns on Table 1 above for Court 13. This shows an average light level of 304lx, Min/Avg (U1) of 0.34 and Min/Max (U2) of 0.23.

3 Glare Tennis #13 GR – Page 4 – Shows the results for the GR (Glare Rating) columns on Table 1 above for Court 13. This shows a maximum GR of 37.

4 Tennis #14 TPA – Page 5 – Shows the results for the PPA columns on Table 1 above for Court 14. This shows an average light level of 356lx, Min/Avg (U1) of 0.70 and Min/Max (U2) of 0.54.

5 Tennis #14 TPA – Page 6 – Shows the results for the TPA columns on Table 1 above for Court 14. This shows an average light level of 303lx, Min/Avg (U1) of 0.31 and Min/Max (U2) of 0.20.

6 Glare Tennis #14 GR – Page 7 – Shows the results for the GR (Glare Rating) columns on Table 1 above for Court 14. This shows a maximum GR of 37.

7 Tennis #12 PPA – Page 8 – Shows the results for the PPA columns on Table 1 above for Court 12. This shows an average light level of 371lx, Min/Avg (U1) of 0.62 and Min/Max (U2) of 0.41.

8 Tennis #12 TPA – Page 9 – Shows the results for the TPA columns on Table 1 above for Court 12. This shows an average light level of 330lx, Min/Avg (U1) of 0.41and Min/Max (U2) of 0.24.

9 Glare Tennis #12 GR – Page 10 – Shows the results for the GR (Glare Rating) columns on Table 1 above for Court 12. This shows a maximum GR of 42.

10 Tennis #11 PPA – Page 11 – Shows the results for the PPA columns on Table 1 above for Court 11. This shows an average light level of 377lx, Min/Avg (U1) of 0.62 and Min/Max (U2) of 0.43.

11 Tennis #11 TPA – Page 12 – Shows the results for the TPA columns on Table 1 above for Court 11. This shows an average light level of 331lx, Min/Avg (U1) of 0.32 and Min/Max (U2) of 0.20.

12 Glare Tennis #11 GR – Page 13 – Shows the results for the GR (Glare Rating) columns on Table 1 above for Court 11. This shows a maximum GR of 42.

Obtrusive Light Descriptive Summary

AS 4282 specifies that the light level is to be assessed at 1.5m above ground level (grade), and that all calculation points are to be assessed on the basis that there are no blockages between the light source and the measurement point. (i.e. cannot allow for light blockage by trees or other structures) and must be assessed with a maintenance factor of 1.00 (i.e there is soiling or other light depreciation). In layman's terms, we are required to treat the light source at it's best performance, and there is nothing to mitigate or interfere with the light between the source and the calculation point.

13 Spill – Page 14 – this shows calculation points surrounding the proposed installation on a 5m x 5m grid. It can be seen there is no light contribution from the court lighting beyond the cycle path on the river side of the courts, and no light beyond the road.

Equipment Layout - Page 15 shows the pole locations in relation to the aiming point (indicated in the centre of Court 13). Pole heights and number of fixtures per pole are indicated on Page 15 on the table on the right of the page.

Applecross Tennis Club

Applecross,WA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
P1-P4	8.0	8.0	1	TLC-LED-400	0.40 kW	A
P5-P8	8.0	8.0	1	TLC-LED-400	0.40 kW	B
P9-P12	10.0	10.0	2	TLC-LED-400	0.80 kW	C
12			***16***		***6.40 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A		1.6 kW	4
B		1.6 kW	4
C		3.2 kW	8

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-400	LED 5700K - 75 CRI	400W	46,500	>120,000	>120,000	>120,000	16

Single Luminaire Amperage Draw Chart

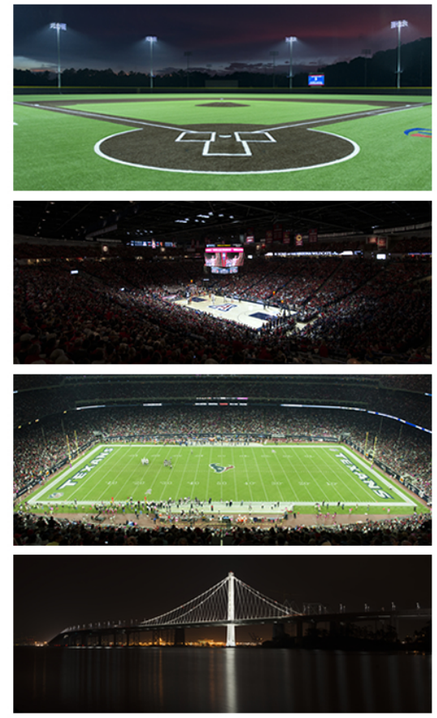
Driver (.90 min power factor)	Line Amperage Per Luminaire					
Single Phase Voltage	**220 (50)**	**230 (50)**	**240 (50)**	**380 (50)**	**400 (50)**	**415 (50)**
TLC-LED-400	2.2	2.1	2.0	1.3	1.2	1.2

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Min/Max	Min/Ave		
01 Tennis #13 - PPA	Horizontal Illuminance	356	264	455	0.58	0.74	A	4
02 Tennis #13 - TPA	Horizontal Illuminance	304	103	455	0.23	0.34	A	4
03 Glare - Tennis #13	Glare Rating	33.9	28	37	0.75	0.83	A	4
04 Tennis #14 - PPA	Horizontal Illuminance	357	250	463	0.54	0.70	B	4
05 Tennis #14 - TPA	Horizontal Illuminance	303	93	463	0.20	0.31	B	4
06 Glare - Tennis #14	Glare Rating	33.6	28	37	0.75	0.83	B	4
07 Tennis #12 - PPA	Horizontal Illuminance	371	231	544	0.43	0.62	C	8
08 Tennis #12 - TPA	Horizontal Illuminance	331	135	556	0.24	0.41	C	8
09 Glare - Tennis #12	Glare Rating	35.1	10	42	0.24	0.28	C	8
10 Tennis #11 - PPA	Horizontal Illuminance	378	234	544	0.43	0.62	C	8
11 Tennis #11 - TPA	Horizontal Illuminance	331	106	544	0.20	0.32	C	8
12 Glare - Tennis #11	Glare Rating	35	10	42	0.24	0.29	C	8
13 Spill	True Max Vert Illuminance	41.1	0	574	0.00	0.00	A,B,C	16

From Hometown to Professional



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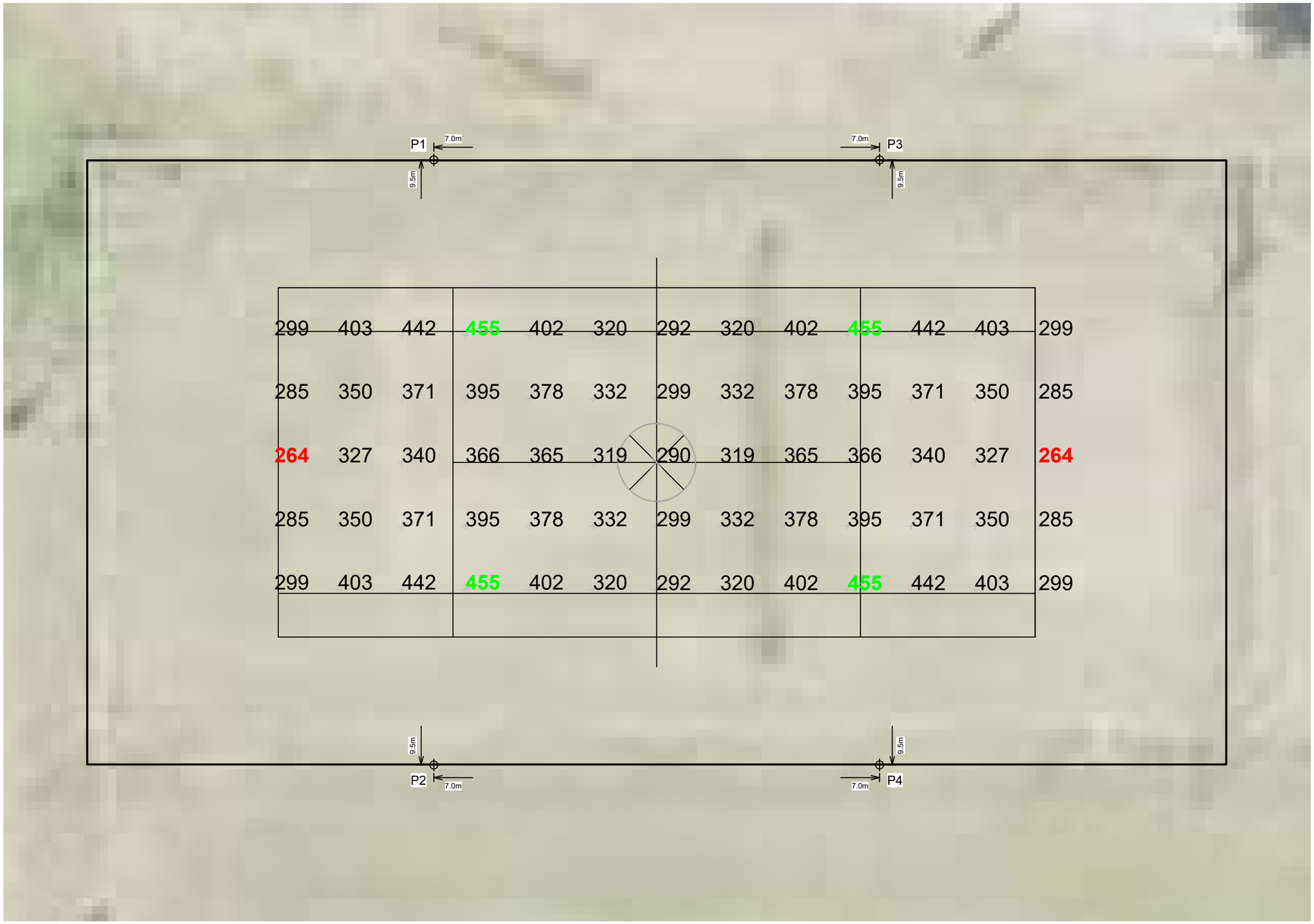
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P1-P4	8m	-	8m	TLC-LED-400	1	1	0
4	TOTALS					4	4	0



SCALE 1: 125

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: John · File #230428_B · 25-Sep-23

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**01 Tennis #13 - PPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL LUX

	Entire Grid
Scan Average:	**356.33**
Maximum:	455
Minimum:	264
Min / Avg:	0.74
Min / Max:	**0.58**
UG (adjacent pts):	1.35
CU:	0.55
No. of Points:	65

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**4**
Total Load:	1.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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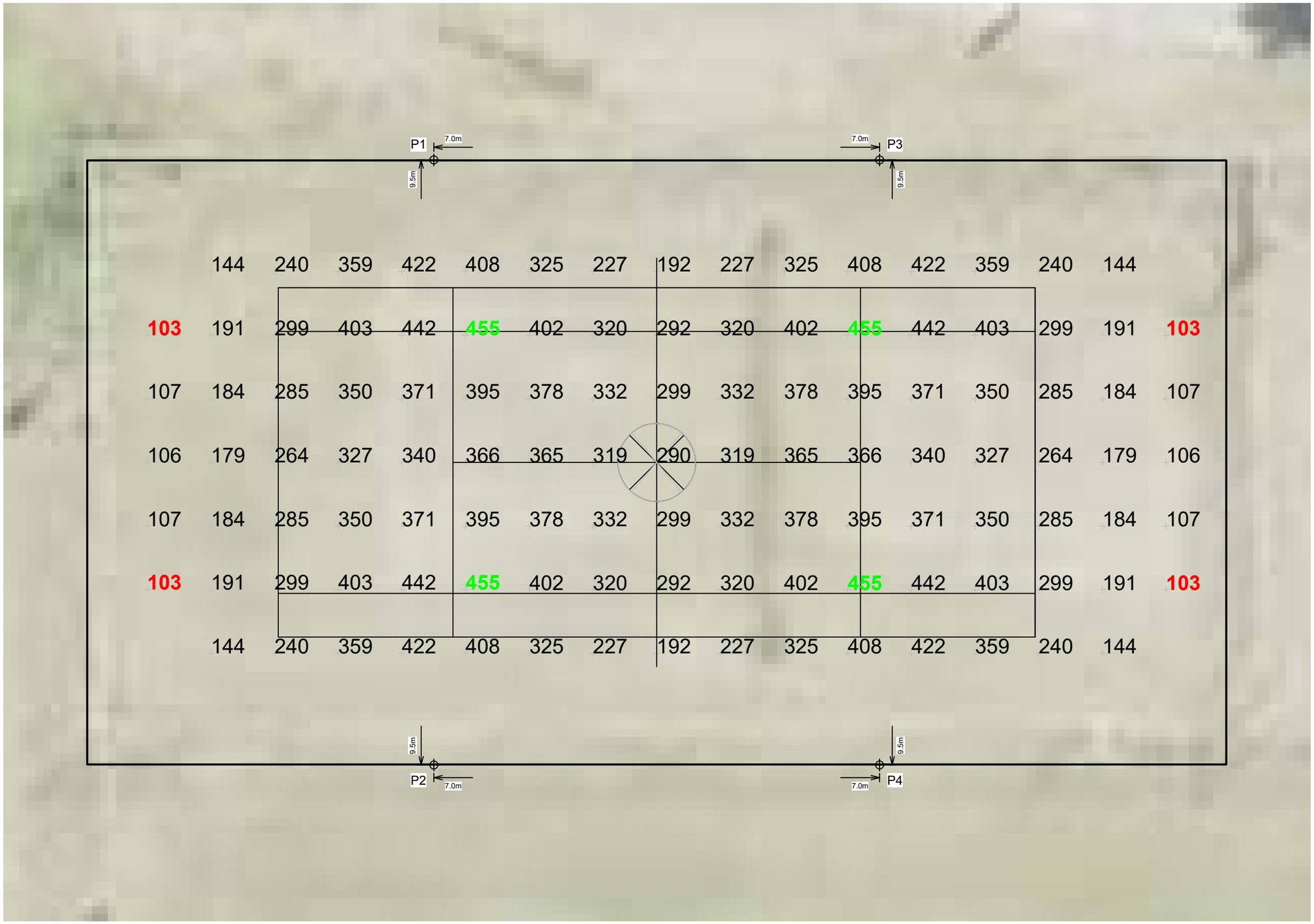
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P1-P4	8m	-	8m	TLC-LED-400	1	1	0
4	TOTALS					4	4	0



SCALE 1: 125

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: John · File #230428_B · 25-Sep-23

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**02 Tennis #13 - TPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL LUX

	Entire Grid
Scan Average:	**304.00**
Maximum:	455
Minimum:	103
Min / Avg:	0.34
Min / Max:	**0.23**
UG (adjacent pts):	1.85
CU:	0.82
No. of Points:	115

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**4**
Total Load:	1.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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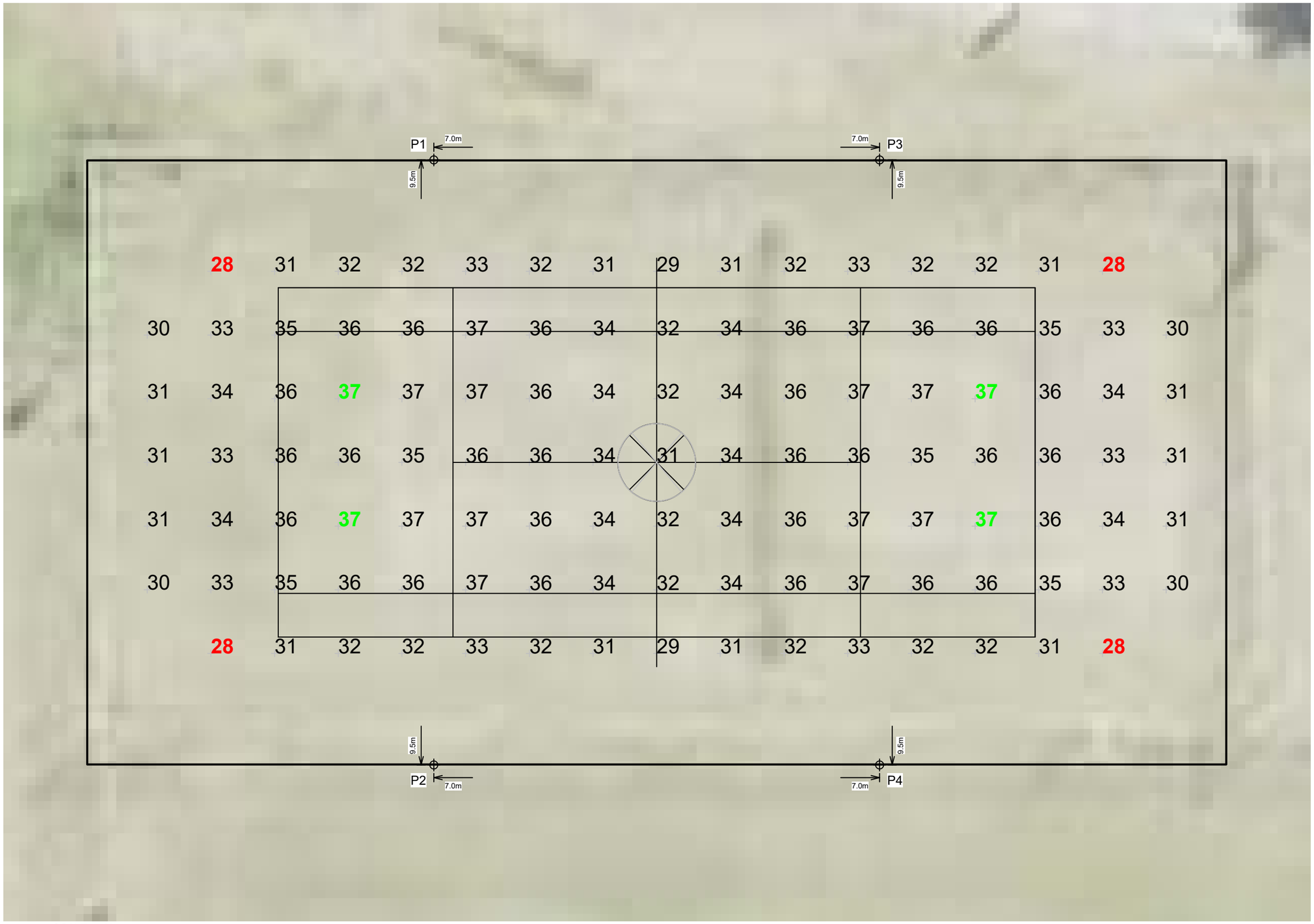
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P1-P4	8m	-	8m	TLC-LED-400	1	1	0
4	TOTALS					4	4	0



SCALE 1: 125

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**03 Glare - Tennis #13**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.5m above grade

ILLUMINATION SUMMARY

MAINTAINED GLARE RATING: Max Reading	
	Entire Grid
Scan Average:	**33.88**
Maximum:	37
Minimum:	28
No. of Points:	115
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	**4**
Total Load:	1.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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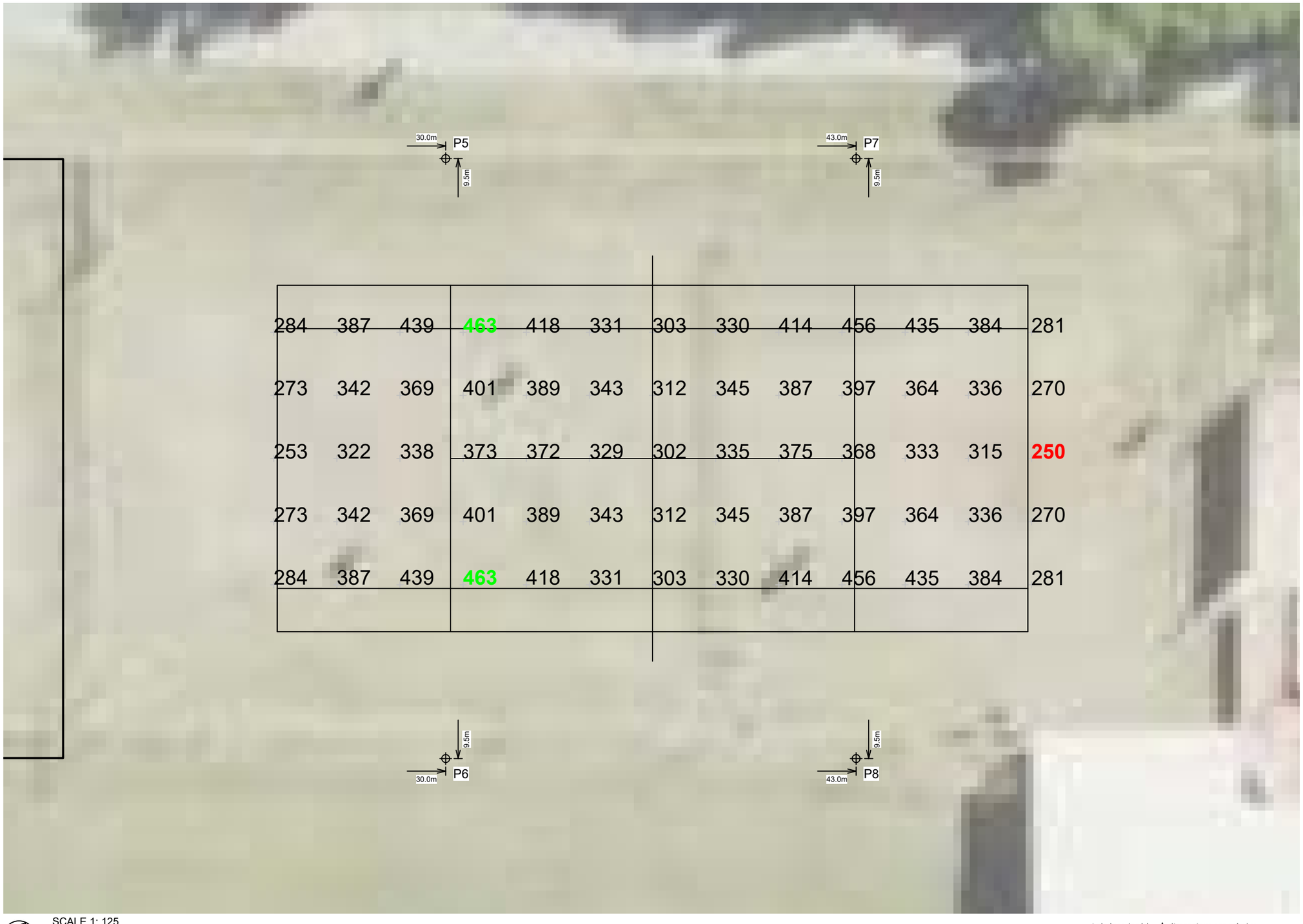
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P5-P8	8m	-	8m	TLC-LED-400	1	1	0
4	TOTALS					4	4	0



SCALE 1: 125

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**04 Tennis #14 - PPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL LUX

	Entire Grid
Scan Average:	**356.57**
Maximum:	463
Minimum:	250
Min / Avg:	0.70
Min / Max:	**0.54**
UG (adjacent pts):	1.37
CU:	0.55
No. of Points:	65

LUMINAIRE INFORMATION

Applied Circuits:	B
No. of Luminaires:	**4**
Total Load:	1.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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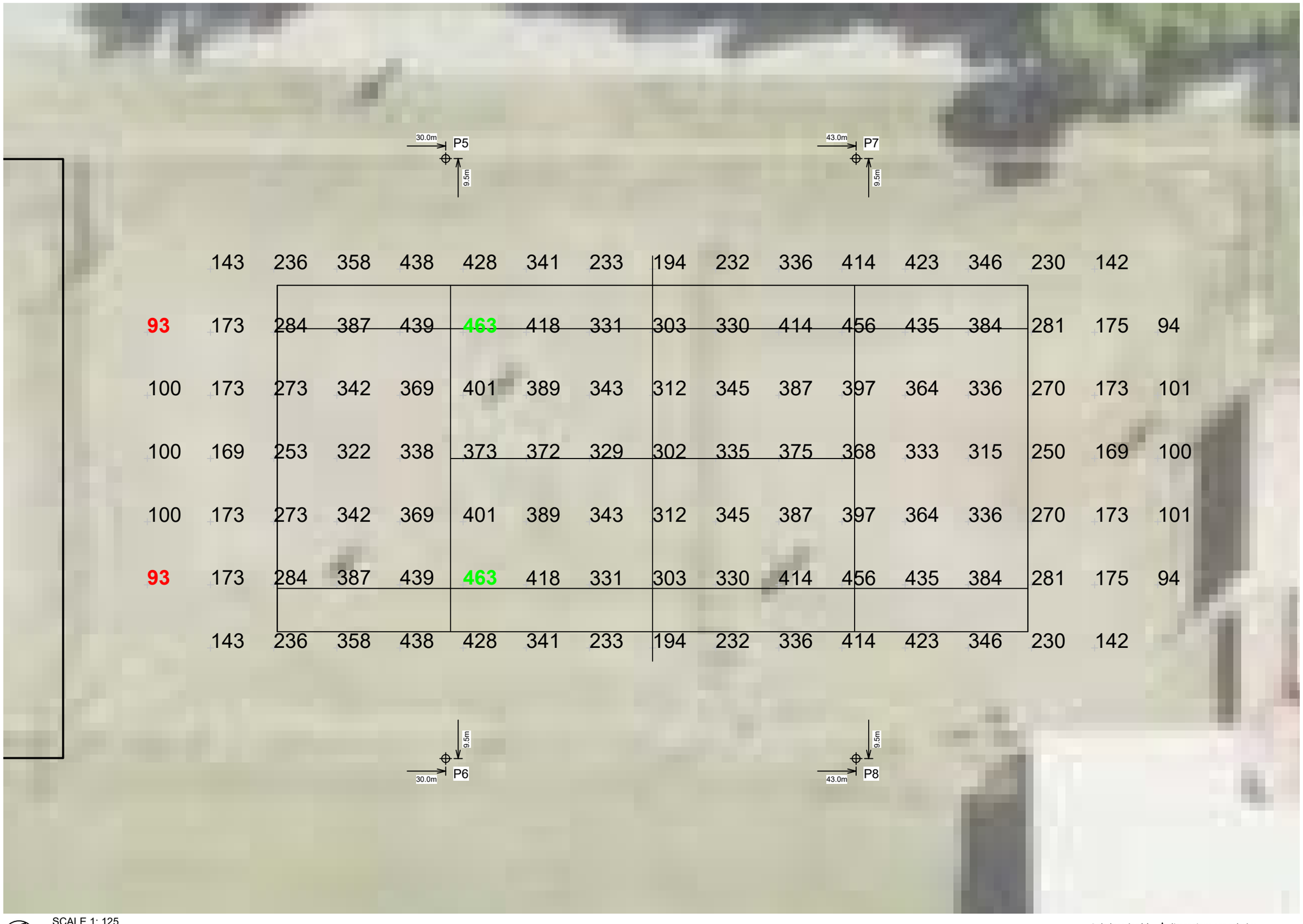
EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P5-P8	8m	-	8m	TLC-LED-400	1	1	0
4	TOTALS					4	4	0



Applecross Tennis Club

Applecross,WA

GRID SUMMARY	
Name:	**05 Tennis #14 - TPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY	
MAINTAINED HORIZONTAL LUX	
	Entire Grid
Scan Average:	**303.19**
Maximum:	463
Minimum:	93
Min / Avg:	0.31
Min / Max:	**0.20**
UG (adjacent pts):	1.87
CU:	0.82
No. of Points:	115
LUMINAIRE INFORMATION	
Applied Circuits:	B
No. of Luminaires:	**4**
Total Load:	1.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 125

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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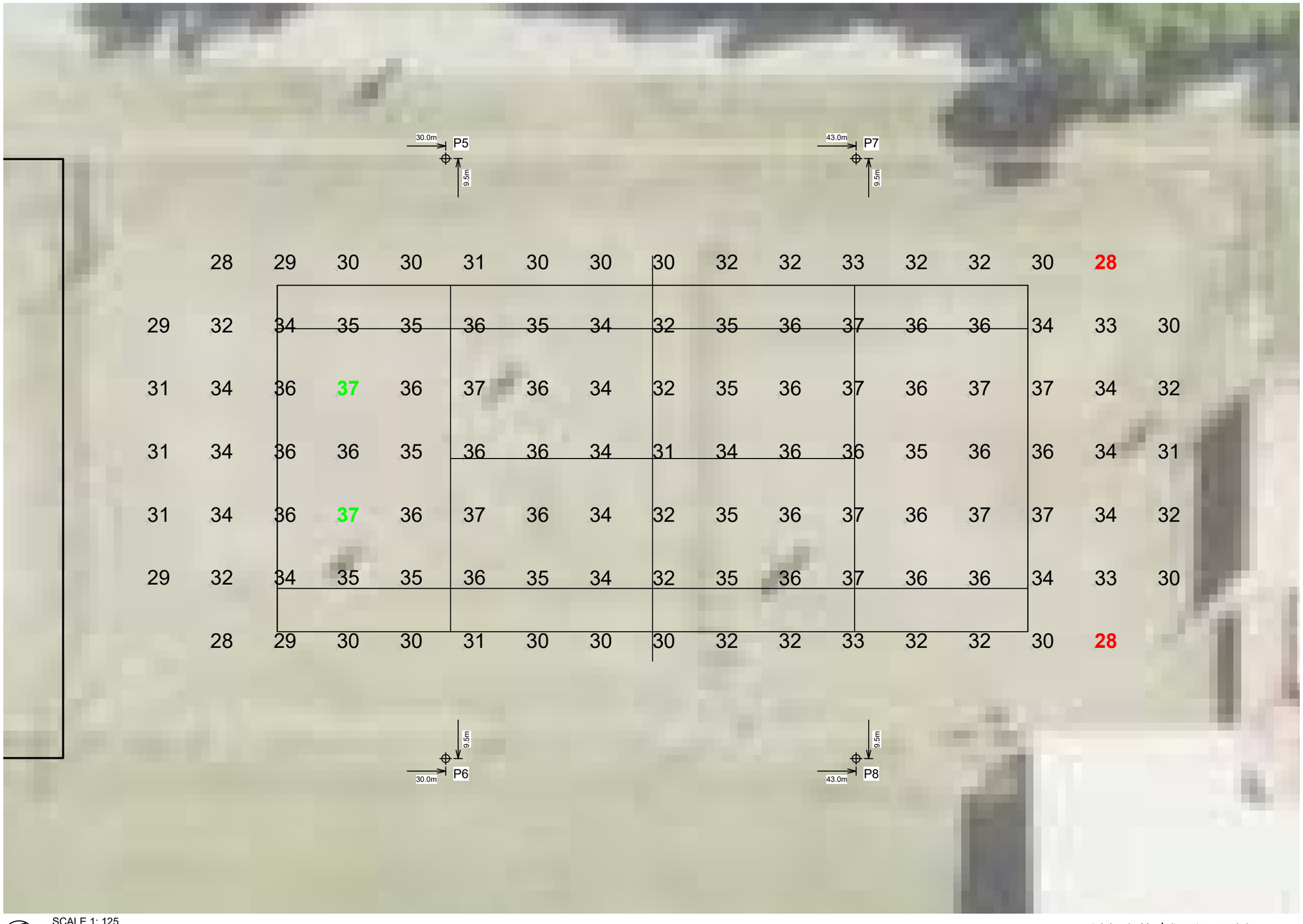
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P5-P8	8m	-	8m	TLC-LED-400	1	1	0
4	TOTALS					4	4	0



Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**06 Glare - Tennis #14**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.5m above grade

ILLUMINATION SUMMARY

MAINTAINED GLARE RATING: Max Reading	
	Entire Grid
Scan Average:	**33.57**
Maximum:	37
Minimum:	28
No. of Points:	115
LUMINAIRE INFORMATION	
Applied Circuits:	B
No. of Luminaires:	**4**
Total Load:	1.6 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 125

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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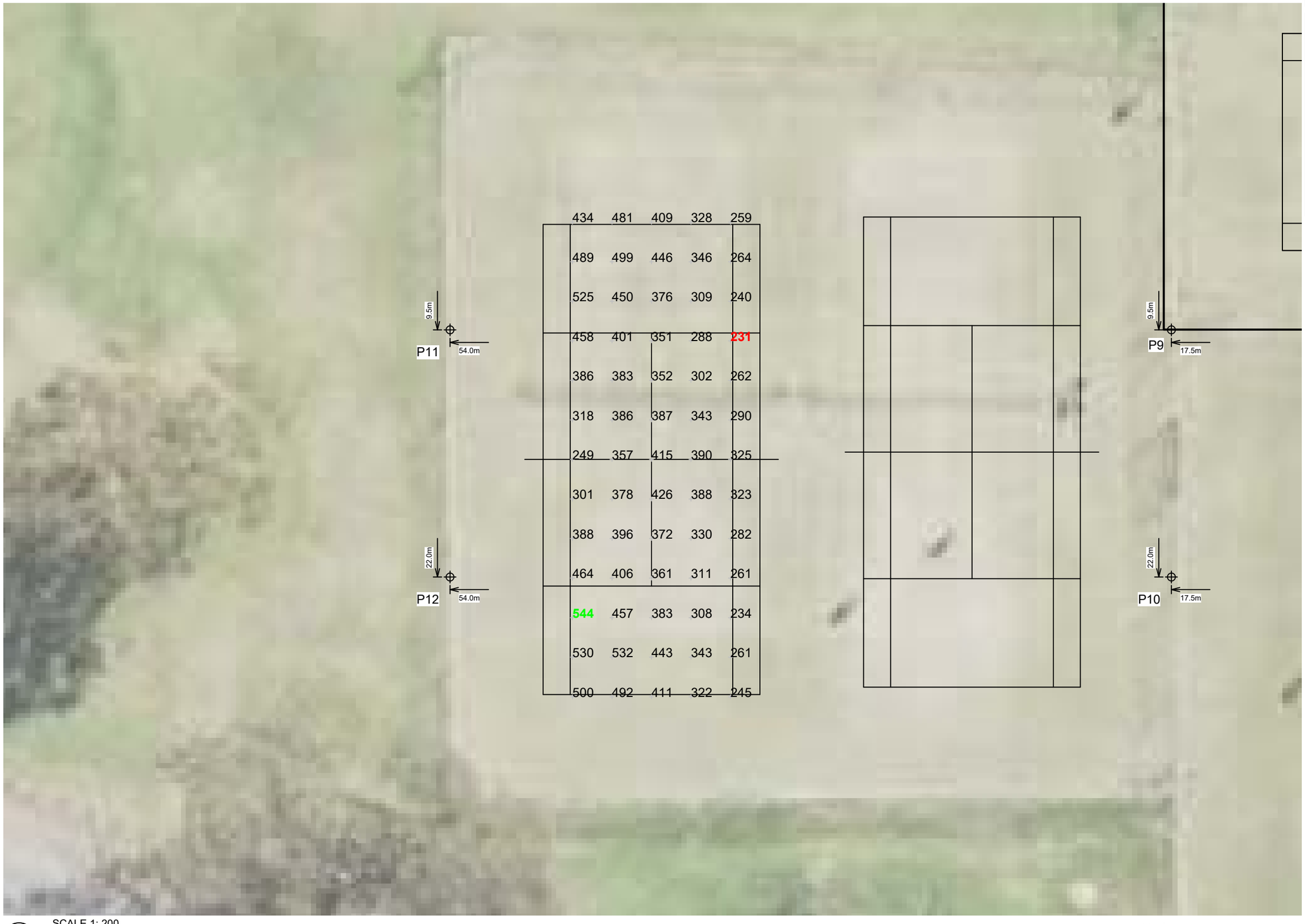
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P9-P12	10m	-	10m	TLC-LED-400	2	2	0
4	TOTALS					8	8	0



Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**07 Tennis #12 - PPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL LUX

	Entire Grid
Scan Average:	**371.11**
Maximum:	544
Minimum:	231
Min / Avg:	0.62
Min / Max:	**0.43**
UG (adjacent pts):	1.43
CU:	0.25
No. of Points:	65

LUMINAIRE INFORMATION

Applied Circuits:	C
No. of Luminaires:	**8**
Total Load:	3.2 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 200

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P9-P12	10m	-	10m	TLC-LED-400	2	2	0
4	TOTALS					8	8	0

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**08 Tennis #12 - TPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL LUX

	Entire Grid
Scan Average:	**330.76**
Maximum:	556
Minimum:	135
Min / Avg:	0.41
Min / Max:	**0.24**
UG (adjacent pts):	2.25
CU:	0.40
No. of Points:	115

LUMINAIRE INFORMATION

Applied Circuits:	C
No. of Luminaires:	**8**
Total Load:	3.2 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 200

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P9-P12	10m	-	10m	TLC-LED-400	2	2	0
4	TOTALS					8	8	0

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**09 Glare - Tennis #12**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.5m above grade

ILLUMINATION SUMMARY

MAINTAINED GLARE RATING: Max Reading	
	Entire Grid
Scan Average:	**35.10**
Maximum:	42
Minimum:	10
No. of Points:	115
LUMINAIRE INFORMATION	
Applied Circuits:	C
No. of Luminaires:	**8**
Total Load:	3.2 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 200

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P9-P12	10m	-	10m	TLC-LED-400	2	2	0
4	TOTALS					8	8	0

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**10 Tennis #11 - PPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL LUX

	Entire Grid
Scan Average:	**377.98**
Maximum:	544
Minimum:	234
Min / Avg:	0.62
Min / Max:	**0.43**
UG (adjacent pts):	1.42
CU:	0.26
No. of Points:	65

LUMINAIRE INFORMATION

Applied Circuits:	C
No. of Luminaires:	**8**
Total Load:	3.2 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 200

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P9-P12	10m	-	10m	TLC-LED-400	2	2	0
4	TOTALS					8	8	0

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**11 Tennis #11 - TPA**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.0m above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL LUX

	Entire Grid
Scan Average:	**331.21**
Maximum:	544
Minimum:	106
Min / Avg:	0.32
Min / Max:	**0.20**
UG (adjacent pts):	2.52
CU:	0.40
No. of Points:	115

LUMINAIRE INFORMATION

Applied Circuits:	C
No. of Luminaires:	**8**
Total Load:	3.2 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 200

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: John · File #230428_B · 25-Sep-23

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	P9-P12	10m	-	10m	TLC-LED-400	2	2	0
4	TOTALS					8	8	0

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**12 Glare - Tennis #11**
Size:	35.8m x 19.0m
Spacing:	2.0m x 2.0m
Height:	1.5m above grade

ILLUMINATION SUMMARY

MAINTAINED GLARE RATING: Max Reading	
	Entire Grid
Scan Average:	**34.95**
Maximum:	42
Minimum:	10
No. of Points:	115
LUMINAIRE INFORMATION	
Applied Circuits:	C
No. of Luminaires:	**8**
Total Load:	3.2 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 200

0 10m 20m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
8	P1-P8	8m	-	8m	TLC-LED-400	1	1	0
4	P9-P12	10m	-	10m	TLC-LED-400	2	2	0
12	TOTALS					16	16	0

Applecross Tennis Club

Applecross,WA

GRID SUMMARY

Name:	**13 Spill**
Size:	35.8m x 19.0m
Spacing:	5.0m x 5.0m
Height:	1.5m above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL LUX

	Entire Grid
Scan Average:	**41.13**
Maximum:	574
Minimum:	0
Min / Avg:	0.00
Min / Max:	**0.00**
UG (adjacent pts):	1707.46
CU:	1.00
No. of Points:	660

LUMINAIRE INFORMATION

Applied Circuits:	A, B, C
No. of Luminaires:	**16**
Total Load:	6.4 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE 1: 600

0 20m 40m

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: John · File #230428_B · 25-Sep-23

Applecross Tennis Club

Applecross,WA

EQUIPMENT LAYOUT

INCLUDES:

· Tennis

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ?3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
8	P1-P8	8m	-	8m	TLC-LED-400	1
4	P9-P12	10m	-	10m	TLC-LED-400	2
12	TOTALS					16

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Driver (.90 min power factor)	Line Amperage Per Luminaire (max draw)					
Single Phase Voltage	220 (50)	230 (50)	240 (50)	380 (50)	400 (50)	415 (50)
TLC-LED-400	2.2	2.1	2.0	1.3	1.2	1.2

SCALE 1: 600

0 20m 40m

Pole location(s) ⌖ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: John · File #230428_B · 25-Sep-23

TLC *for* LED™
Total Light Control™

musco Lighting

We Make It Happen®

Keeping Good Lighting Affordable

With the emergence of LED sports lighting, facility owners are discovering that different manufacturers produce vastly different results.

The LED light source has distinctive challenges and advantages. To realise the full potential of LED lighting, it takes experience and a proven system for controlling and applying the unique characteristics of the diode in a sports setting.

With Musco's more than 45 years of experience—and over a decade of researching LED—our Team has looked at the combination of issues to achieve the best solution to meet your needs from structures, to quality of on-pitch light, to off-site impact, to energy and costs.

The result is a system that makes Musco's great lighting even better.

Better for players . . .
who want to perform their best and be able to track the entire flight of the ball.

Better for fans . . .
who want to see the game better and enjoy world-class light shows watching preps or the pros.

Better for neighbours . . .
who won't have light spill or glare in their homes or lights left on when not in use.

Better for the night sky . . .
with more light directed onto the pitch and less spilling above it.

Better for your budget . . .
an affordable system that's built to last and control operating costs.

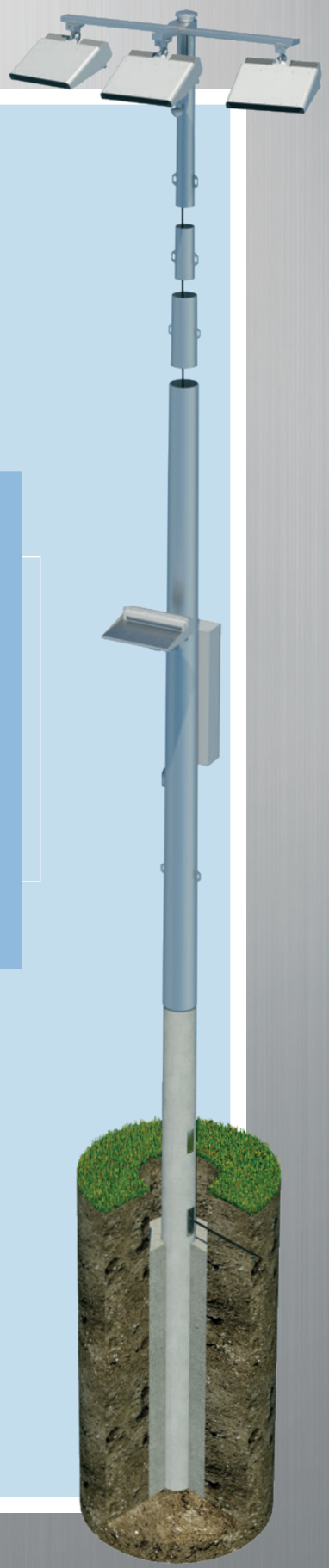
And you won't have to worry about maintenance costs for up to 10 years.

Control

from foundation to poletop. . .

from the light source to the pitch,
preserving the night sky. . .

assuring the results you expect,
day 1. . . year 1. . . and for 10 years.



A Unique System Design

5 Easy Pieces™ complete from foundation to poletop.

While other manufacturers produce single luminaires, our system approach delivers better long-term reliability and trouble-free operation.

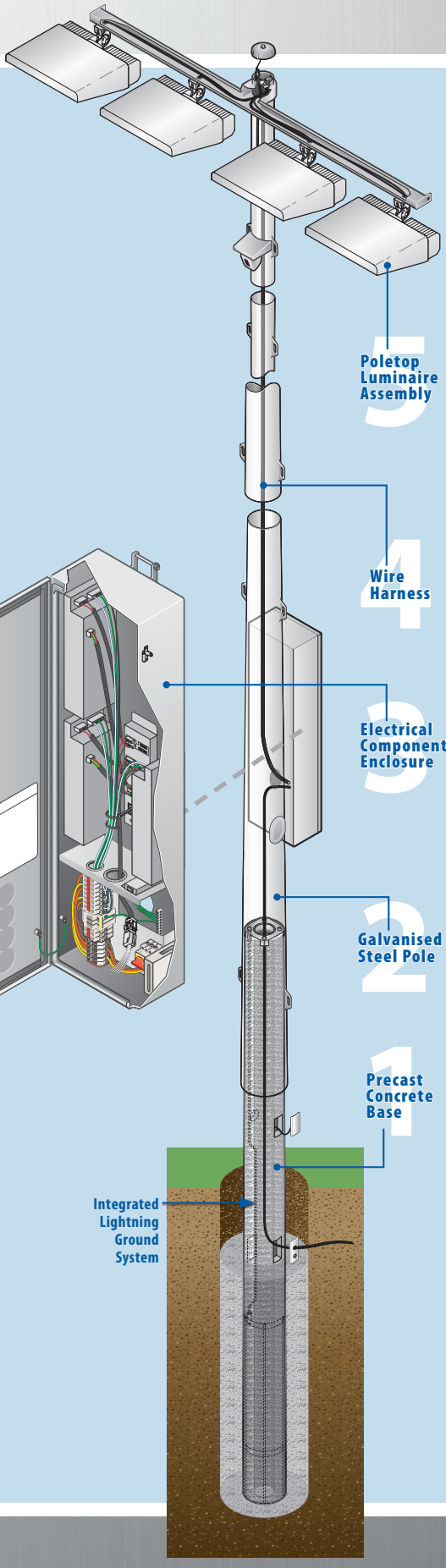
Whether it's Light-Structure System™ complete from foundation to poletop, or SportsCluster™ system retrofitted to existing structures, we include lighting, structural, and electrical components designed to work together.

Our system provides a more protective environment for the LED's sensitive electronics, integrated grounding, surge protection, and remote drivers so servicing can be done from a step ladder, not a lift.

And we guarantee its performance for up to 10 years.

Control from the foundation to the poletop.

TLC *for* **LED**™
Total Light Control™



"Advancements in all aspects of fixture design are critical to achieving the full performance of LED technology."

— U.S. Department of Energy
www.energy.gov/eere/ssl/led-basics

A Better Night Game Experience

The key issues in sports lighting haven't changed—how do you put more light onto the pitch, spill less around it, protect the night sky, reduce glare, and ensure it performs when needed and withstands the elements.

Our TLC for LED™ system delivers highly-controlled downward light from the poletop, along with precisely-targeted upward light from our BallTracker™ luminaires. Together, this patented system illuminates the underside of a ball in flight, creates better contrast against the dark night sky, and creates unparalleled cut-off, preventing spill and glare from affecting the surrounding area.

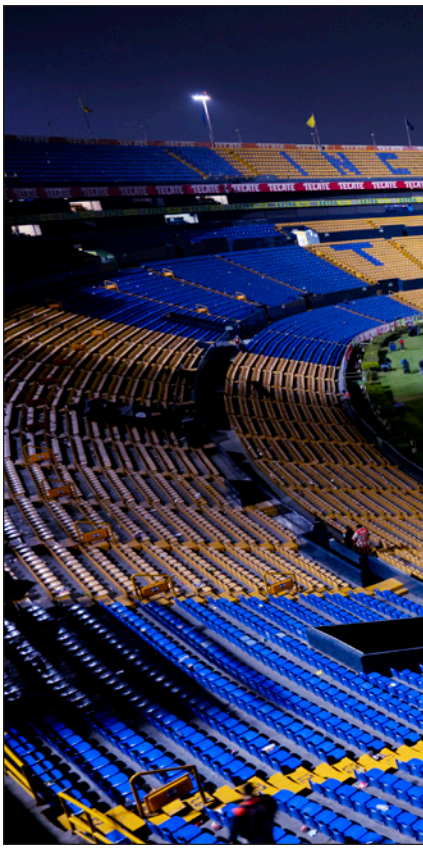
And for an enhanced entertainment experience, Musco's strategically located colour-changing luminaires and innovative light-to-sound synchronisation capabilities create big league light shows for players and fans at pitches of all sizes.

This is why, when you walk onto a pitch lighted by Musco, it just looks better.

Sahlen Field · Buffalo, New York, USA

"Now you can actually see the seams of the baseball coming in at you, and you can pick up spin easier. BallTracker is really important because when the ball gets up into the air it keeps the ball white against the dark sky. So it helps a lot."

— Nate Esposito, Wilmington Blue Rocks (MiLB)



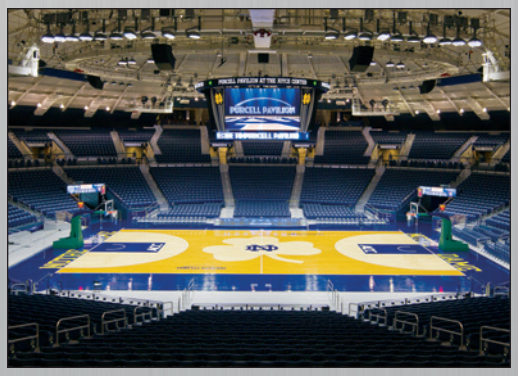
Estadio Tigres · Nuevo Leon, Mexico

Control from the light source to the pitch.

With patented BallTracker™ technology, players enjoy quality lighting, no glare, and better ability to track the entire flight of the ball.

Mount Rushmore - Keystone, South Dakota, USA

Pinpoint control from 335 metres away highlights the target area while preserving surrounding darkness.



University of Notre Dame - Notre Dame, Indiana, USA

Event lighting with dimming saves energy for high-usage, multi-use venues.

Show-Light™ theatrics and special effects enhance fan and TV experience.

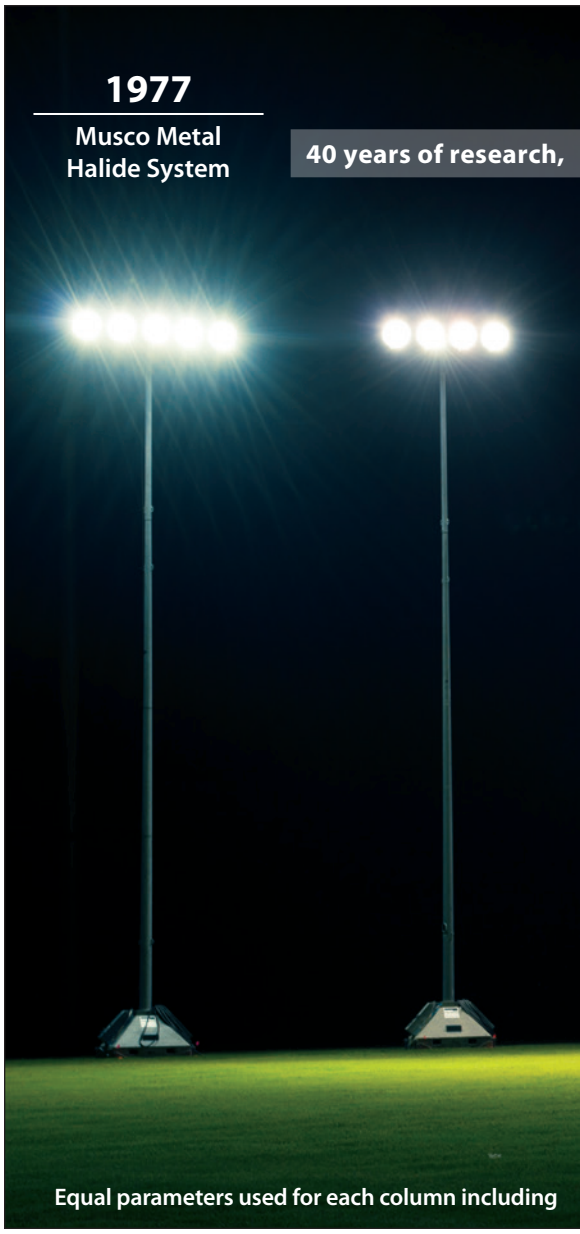
A Solution Neighbours Will Love

Emitting light is easy, controlling it isn't. At Musco, we care as much about preserving darkness around your pitch as we do putting high-quality lighting onto it.

Our system's custom optics, designed around the LEDs, control and apply the light precisely where it's needed. And our patented luminaire visoring greatly reduces glare at the light source.

This means no spill light or disruptive glare affecting neighbouring homes, and the preservation of dark skies above. It's why our system could be installed at a large, multi-pitch sports complex located in close proximity to an international airport.

Our light control capabilities have made lighting possible at pitches where, previously, it wasn't allowed due to community concerns.



Control preserving the night sky.

"Glyndon Park is in a naturally wooded residential area. We didn't want to illuminate the homes of neighbours in the area. I initially wasn't supportive of putting in traditional lights. The product Musco has developed allows us to light this field, yet light nothing else around it."

— Parks and Recreation Director, Vienna, VA

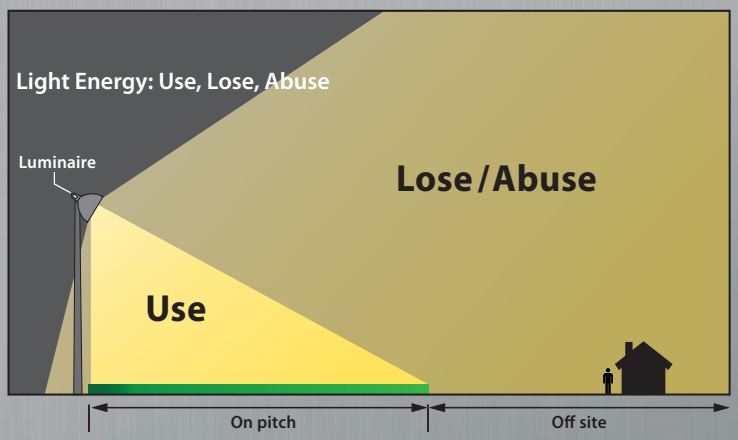
Glyndon Park Little League, Vienna, Virginia, USA

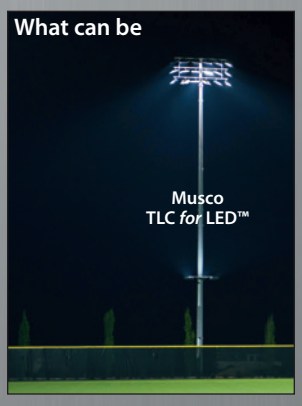
increasing efficiency and minimising environmental impact.

Today
Musco LED System

Today
Other Luminaire Manufacturer LED

on-pitch light produced, wattage, height, and aiming angle.





A Pitch That's Always Ready for Play

With the remote facility management of Musco's Control-Link™ service, your pitch will always have light when it's needed.

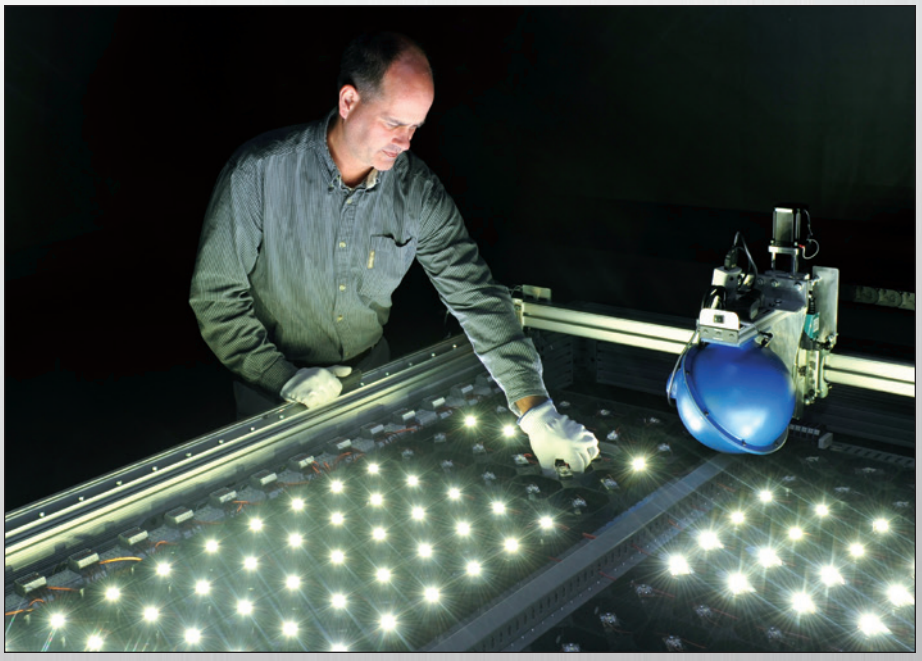
You'll be able to instantly turn your lights on or off from anywhere, with the touch of a smart phone. Our Team at Control-Link Central™ will be there for you 24/7 to provide scheduling and monitoring support.

In fact, if a problem arises we'll likely know about it before you do, right down to the luminaire. Here's a look at the service we provided customers in just the past year:

- ***Turned lights on/off remotely for more than 7.6 million events.***
- ***Conducted routine inspections and maintenance at over 11,000 pitches.***
- ***Helped with scheduling and answered questions on over 297,000 calls, over 981,000 app sessions, and 1.3 million website logins.***
- ***Traveled enough distance servicing pitches to circle the equator 24 times.***

And with our 10-year parts and labour warranty, you'll have peace of mind for the next 3650 days knowing that you'll pay zero maintenance costs, won't have headaches over staffing and managing your floodlights, and will be free from neighbours complaining about floodlights being left on.

Control assuring the results you expect.



Our R&D, customisation, and application capabilities deliver solutions specific to each customer's needs.

"Musco called to let us know there was an issue before we knew we had a problem."

— **Stephen Cooke, CPRP, CYSA**
Greenville County Recreation Athletics Manager, Taylors, SC

Our regionally-based technicians provide prompt service for 10 years.

Our Control-Link™ service provides 24/7 proactive monitoring and the support of a fully staffed call center.

Musco's Light-Structure System™ performs in real world conditions ***for 10 years, guaranteed.***

We Make It Happen.®

Control

from foundation to poletop…

from the light source to the pitch,
preserving the night sky…

assuring the results you expect,
day 1… year 1… and for 10 years.

We Make It Happen®

www.musco.com
e-mail: lighting@musco.com
Phone: 800.825.6030

Not all LED is created **equal**

Due to the intensity of the LED light source, increased measures should be taken to provide optic controls to minimize glare

Denver International Airport – Light Test

Musco: what can be

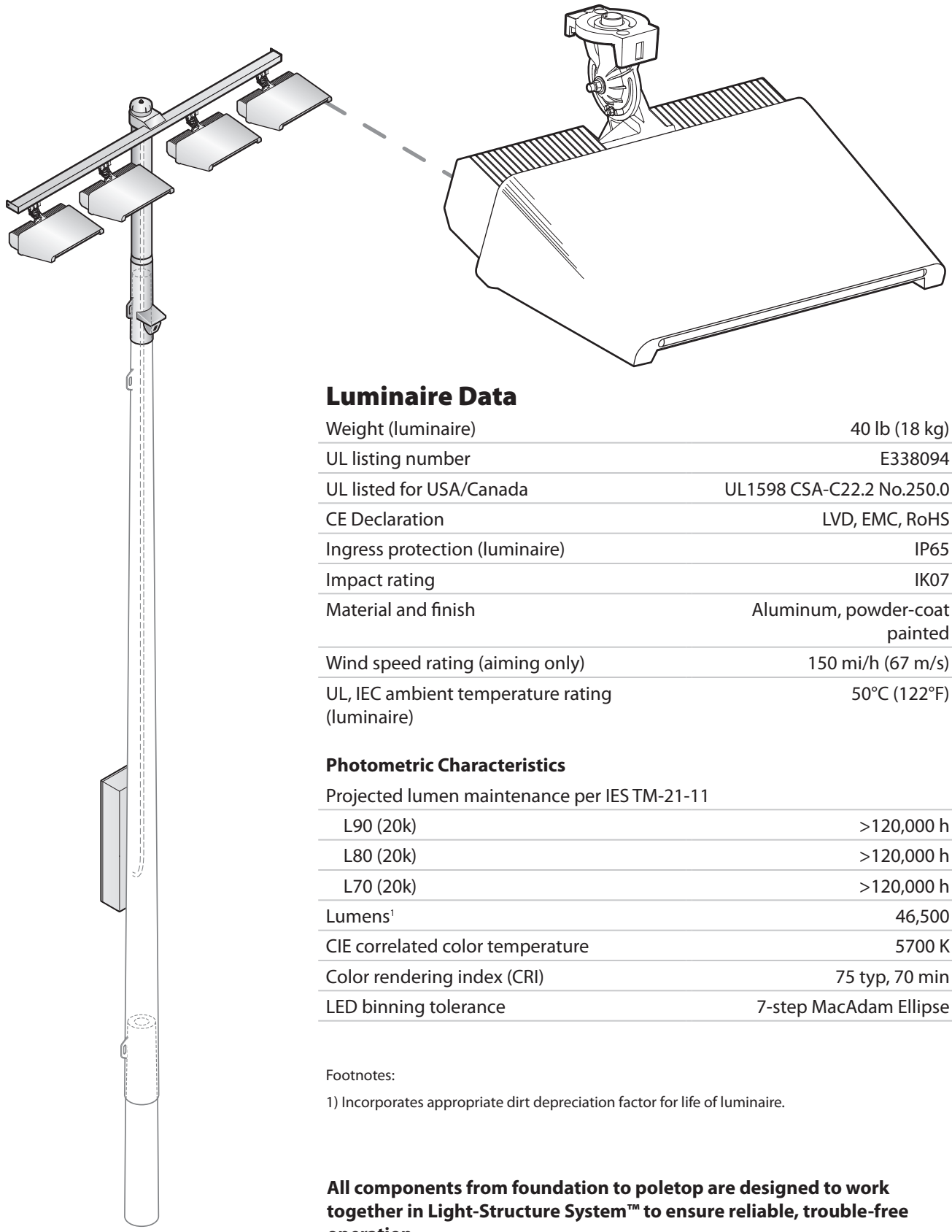
2014 Musco Light•Structure Green System™ with LED light source
LakePoint Sporting Community · Emerson, Georgia, USA

What often is

2014 Other manufacturer's fixture with LED light source

For more than 40 years the Musco Team has focused on researching control of light energy to deliver affordable systems that minimize glare and spill . . . reduce energy . . . provide optimal environment for athletes, spectators, and HD broadcasts . . . and assure long term trouble-free operation.

Luminaire and Driver – TLC-LED-400



Luminaire Data

Weight (luminaire)	40 lb (18 kg)
UL listing number	E338094
UL listed for USA/Canada	UL1598 CSA-C22.2 No.250.0
CE Declaration	LVD, EMC, RoHS
Ingress protection (luminaire)	IP65
Impact rating	IK07
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL, IEC ambient temperature rating (luminaire)	50°C (122°F)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (20k)	>120,000 h
L80 (20k)	>120,000 h
L70 (20k)	>120,000 h
Lumens[1]	46,500
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min
LED binning tolerance	7-step MacAdam Ellipse

Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.

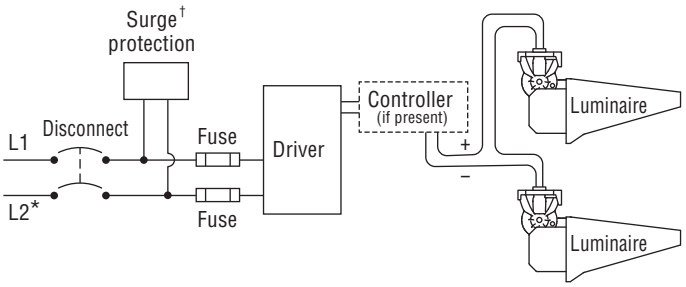
Luminaire and Driver – TLC-LED-400

Driver Data

Electrical Data

Rated wattage[1]	
Per driver	800 W
Per luminaire	400 W
Number of luminaires per driver	2
Starting (inrush) current	<40 A, 256 µs
Fuse rating	15 A
UL, IEC ambient temperature rating, electrical components enclosure	50°C (122°F)
Ingress protection, electrical components enclosure	IP54
Efficiency	95%
Dimming mode	optional
Range, energy consumption	26 – 100%
Range, light output	30 – 100%
Flicker	<2%
Total harmonic distortion (THD) at full output	<20%

Typical Wiring



* If L2 is neutral then not switched or fused.
† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current per luminaire[2]	2.40 A	2.31 A	2.18 A	2.09 A	2.00 A	1.73 A	1.39 A	1.27 A	1.20 A	1.16 A	1.00 A

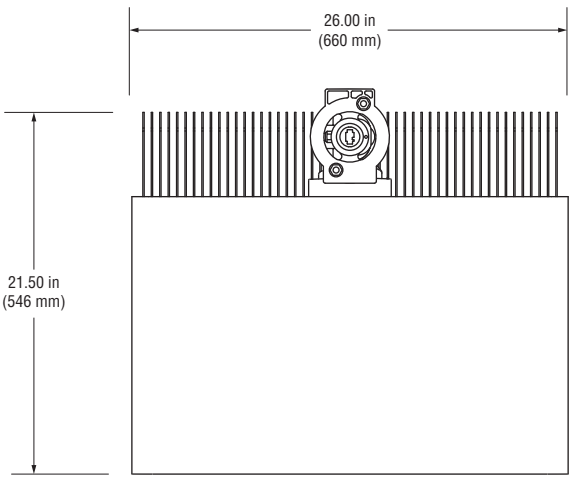
Footnotes:

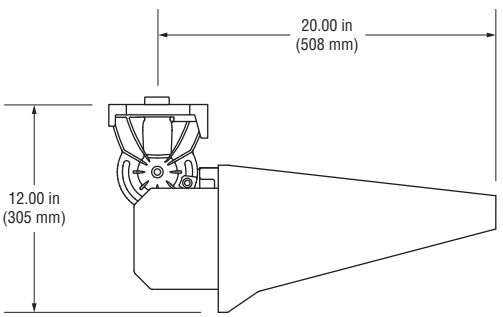
1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.

2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

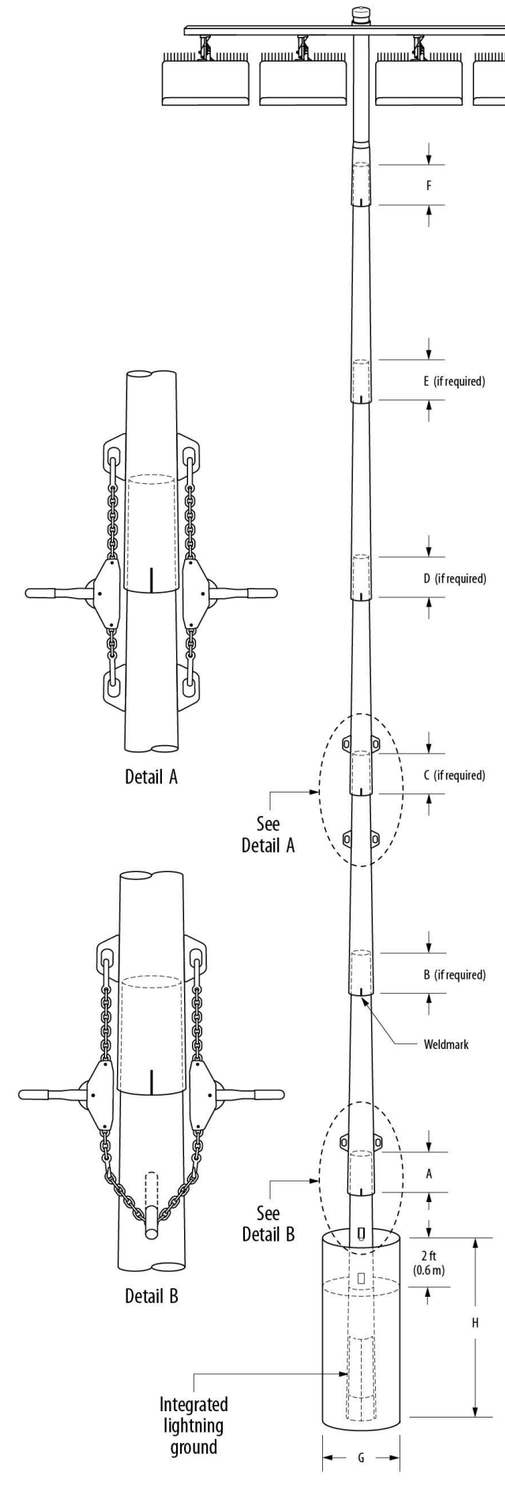
Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.





PRELIMINARY FOUNDATION AND POLE ASSEMBLY DRAWING



R60-62-00-en04-01_B

TABLE 1: POLE ASSEMBLY			
POLE ID	POLE HEIGHT ft (m)	# OF LUMINAIRES	ASSEMBLED POLE WEIGHT [3] lb (kg)
P1	30 (9.1)	1	378 (171)
P2	30 (9.1)	1	378 (171)
P3	30 (9.1)	1	378 (171)
P4	30 (9.1)	1	378 (171)
P5	30 (9.1)	1	378 (171)
P6	30 (9.1)	1	378 (171)
P7	30 (9.1)	1	378 (171)
P8	30 (9.1)	1	378 (171)
P9	30 (9.1)	2	443 (201)
P10	30 (9.1)	2	443 (201)
P11	30 (9.1)	2	443 (201)
P12	30 (9.1)	2	443 (201)

Pole Assembly Notes:

1. Steel pole should overlap concrete base and be seated tight with 1 1/2 ton come-alongs (contractor provided).
2. Align weldmarks on steel sections before assembling.
3. Assembled pole weight includes steel sections, crossarms, luminaires, and electrical components enclosures. If pole has stamped structural design then use pole weight (listed as vertical force) on stamped structural design document.
4. Section overlap must be pulled together until tight. Overlap measurement should be +/- 6 in (150 mm).
5. This document is not intended for use as an assembly instruction. See *Installation Instructions: Light-Structure System™ Lighting System* for complete assembly procedure.

TABLE 2: FOUNDATION DETAILS							
POLE ID	CONCRETE BASE WEIGHT lb(kg)	BURIAL INFORMATION [3,4] G in (mm)	H ft (m)	CONCRETE BACKFILL [1,2] yd³ (m³)	CUT BASE	LIGHTNING GROUND [5] TYPE	SUPPLEMENTAL INSTRUCTION
P1	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P2	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P3	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P4	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P5	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P6	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P7	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P8	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P9	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P10	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P11	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A
P12	1100 (499)	30 (762)	8 (2.4)	1.0 (0.7)	NO	INTEGRATED [6]	N/A

Foundation Notes:

1. Concrete backfill is calculated to 2 ft (0.6m) below grade (no overage included). Top 2 ft (0.6m) to be class 5 soil compacted to 95% density of surrounding undisturbed soil unless otherwise specified in stamped structural design.
2. Concrete backfill required 3000 lb/in² (20 MPa) minimum.
3. Foundation design per 2011 AS 1170.2, Regions A1-A7 mps, exposure category Cat-2, variation STD.
4. Assumes IBC class 5 soils.
5. Standard bases include integrated lightning protection. If bases are cut, supplemental lightning protection is required. Contact Musco for materials and instruction.
6. Lightning protection is a manufacturer installed concrete encased electrode and connector. Ground connection is made when concrete base is installed and footing is poured. No additional steps required.

Applecross Tennis Club - Applecross, WA, Australia

Date:	**09/25/2023**	**Scale:**	**Not to Scale**
Representative:	**Stuart Thomson**	**Page:**	**1 of 1**
Project:	**230428**		**PRELIMINARY**

EcoAcoustics

Applecross Tennis Club

32 The Strand Applecross

Environmental Noise Assessment

7 December 2023

Report Number: 23061206 - 01a

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Byford WA 6122
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Report: 23061206 - 01a

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Signature:		**Signature**	
Date of Issue:	7 December 2023		

Revision History				
Revision	**Description**	**Date**	**Author**	**Checked**

Table of Contents

Executive Summary

EcoAcoustics Pty Ltd was commissioned by Applecross Tennis Club to conduct an assessment of the changes to the Applecross Tennis Club located at 32 The Strand Applecross. The purpose of this report is to assess the noise emissions from the site in accordance with the prescribed standards contained in the *Environmental Protection (Noise) Regulations 1997*.

The results of the noise measurements show that the Applecross Tennis Club can comply with the assigned noise levels associated with the *Environmental Protection (Noise) Regulations 1997* at nearby residential receivers.

1 Introduction

EcoAcoustics Pty Ltd was commissioned by Applecross Tennis Club to conduct an assessment of the Applecross Tennis Club located at 32 The Strand Applecross. This noise impact assessment report has been completed to provide information relating to the noise impact of the change of ground surface to the tennis courts. The purpose of this report is to assess the noise emissions from the site in accordance with the prescribed standards contained in the *Environmental Protection (Noise) Regulations 1997*.

Appendix A contains a description of some of the terminology used throughout this report.

1.1 Site Locality & Surroundings

The site is located at 32 The Strand Applecross within the City of Melville. The nearest noise sensitive premises located across The Strand, to the south of the site. The site and surroundings are shown in an aerial photo in *Figure 1.1.*

Figure 1.1: Site and Surroundings (Source: Google Earth)

1.2 Site Layout

While the tennis club has been located at this site for many years, the court surfaces have changed. It is understood that Courts 1 to 10 have remained grass courts, while Courts 11 and 12 are synthetic grass courts and Courts 13 and 14 are now hard courts, utilising the Laykold Masters Gel System surface. The layout of the tennis courts is presented on *Figure 1.2*.

Figure 1.2: Tennis Court Site Plan (source: Google Earth)

The Applecross Tennis club site contains existing tennis courts which have been located here since the early 1900's. The general use of the tennis courts has been continuous for the entire duration that the courts have been on the site. The site has recently undergone some upgrades, including the installation of flood lights to allow for use during the evenings until 10pm and the resurfacing of four courts, to future weatherproof the site. Courts 13 and 14, located adjacent to the river and furthest from the neighbouring residents, have been resurfaced with a synthetic rubberized surface, known as Laykold Masters Gel System allowing a cushioned hard court. Courts 11 and 12, located across The Strand from the nearest residential premises, have been resurfaced with synthetic grass, which has similar acoustic properties to natural grass – the previous surface. Currently, the site caters to a social contingent of patrons, along with coaching and development squads. Courts are used daily, with grass courts preferred during the dry months for social games and the upgraded hard and synthetic courts used for coaching and winter months. Two tournaments are held at the site per year, with the Applecross Junior Tournament running for four days over the January School holidays, and the Melville Cup, which is typically by invitation operating on Australia Day between 1pm and 5pm prior to the City of Perth Fireworks in the evening, which is highly visible from the site.

Noise associated with the upgrades to the site include:

- Ball hitting the ground/racquet;
- People talking on court;
- Shoes squeaking on Courts 13 and 14;
- Occasional grunting/groaning from competitors;

It is important to note that the site has existed with courts in these locations for many years, as such, the main changes to the noise landscape are the introduction of different surfaces, thus shoe squeaking and the like. People talking, competitors occasionally grunting and even balls hitting racquets have been present at the site and are not different to previous noises experienced in the vicinity of the tennis club.

The upgrades to the site have coincided with the City of Melville upgrading the local road including the kerbs, paths, road surface and also adding additional roadside car parking. The road improvements provide local street parking access for users of the tennis club, the adjacent parkland and residents or visitors to properties located along The Strand. As this carparking is located within the road reserve, and the upgrades have been conducted by Council, it is considered that any noise impact assessment of the parking would have been completed by the City of Melville. Conducing a noise assessment of this local roadside car parking is considered to be inappropriate as this is outside of the jurisdiction of the Applecross Tennis Club. *Figure 1.3* provides a plan showing the City of Melville road upgrades.

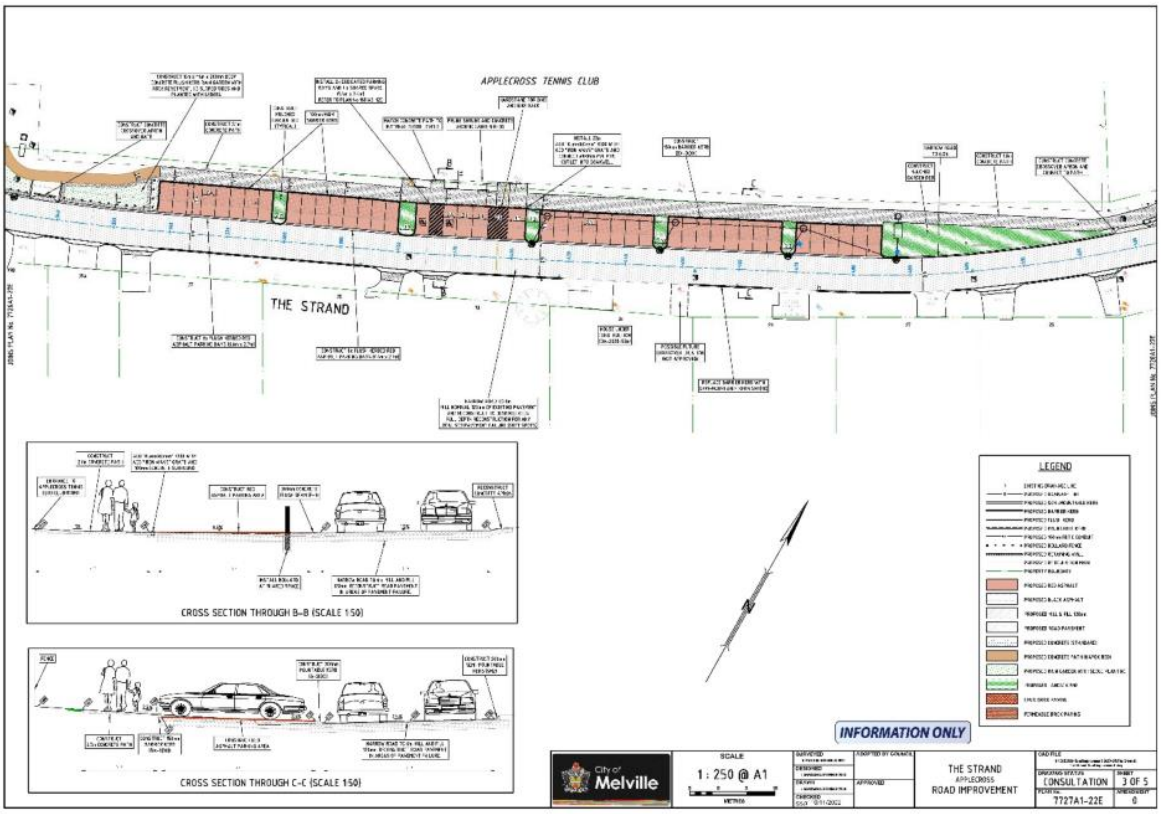


Figure 1.3: City of Melville Road Improvement Plan

2 Criteria

In Western Australia all Environmental noise is regulated by the *Environmental Protection Act 1986* and the *Environmental Protection (Noise) Regulations 1997*. Noise emissions from the site upgrades are required to satisfy the assigned noise levels specified in Regulations 7, 8 and 9.

The standard stipulated in Regulation 7 of the Environmental Protection (Noise) Regulations 1997 states:

7. (1) Noise emitted from any premises or public place when received at other premises –

a) Must not cause or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and

b) Must be free of –

- *Tonality;*
- *Impulsiveness; and*
- *Modulation.*

Regulation 9 defines tonality, impulsiveness and modulation. It is regarded that noise is free of these characteristics if:

a) Tonality, impulsiveness and modulation cannot be equitably removed by means other than decreasing the overall level of noise emission; and

b) Subsequent to any adjustments as displayed in *Table 2.1* noise emissions remain compliant with the required standards when measured at the point of reception.

Table 2.1: Adjustments for Intrusive Characteristics

Tonality	Modulation	Impulsiveness
+ 5dB	+ 5dB	+ 10dB

The baseline assigned levels (prescribed standards) are specified in Regulation 8 and are shown below in *Table 2.2*.

Table 2.2: Baseline Assigned Noise Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise Sensitive	0700 to 1900 hours Monday to Saturday **(Day)**	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays **(Sunday)**	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days **(Evening)**	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays **(Night)**	35 + influencing factor	45 + influencing factor	55 + influencing factor
Commercial	All hours	60	75	80
Industrial	All hours	65	80	90

For the residences located adjacent to the site, an influencing factor of 2 has been determined for those residential premises within 100m of the tennis clubhouse. All other residential premises have an influencing factor of 0. Based on the influencing factors discussed above, the assigned noise levels are shown in *Table 2.3*.

Table 2.4: Assigned Noise Levels

Premises Receiving Noise (Ref Fig 1.1)	Time Of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
29 to 41 The Strand (R3, R4, R5, R6)	0700 to 1900 hours Monday to Saturday **(Day)**	47	57	67
	0900 to 1900 hours Sunday and public holidays **(Sunday)**	42	52	67
	1900 to 2200 hours all days **(Evening)**	42	52	57
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays **(Night)**	37	47	57
43 & 45 The Strand (R1 & R2)	0700 to 1900 hours Monday to Saturday **(Day)**	45	55	65
	0900 to 1900 hours Sunday and public holidays **(Sunday)**	40	50	65
	1900 to 2200 hours all days **(Evening)**	40	50	55
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays **(Night)**	35	45	55

2.1 Regulation 3(a) – Motor vehicle noise

Regulation 3 states:

> 3. *Regulations do not apply to certain noise emissions*
>
> *(1) Nothing in these regulations applies to the following noise emissions –*
>
> *(a) noise emissions from the propulsion or braking systems of motor vehicles operating on a road;*

Based on discussions with the Department of Environment Regulation noise from cars and trucks associated with the propulsion or braking travelling within a car park are not required to comply with the assigned noise levels as a road is defined as:

> *"**road**" means any highway, road or street open to or used by, the public, and includes every carriageway, footway, reservation, median strip and traffic island thereon;*

As noted previously and referring to the plan shown in *Figure 1.3*, the carparking that will be utilised by the tennis club is located within the road reserve, with full public access. This designated road

reserve car parking, along with the adjoining road reserve, has been upgraded by the City of Melville. It has full public access and is not limited to use by the tennis club. In addition, the tennis club has no jurisdiction on the parking within the space, thus, it has not been considered further in this report.

3 Noise Monitoring

3.1 Noise Measurement Methodology

The Regulations specify certain requirements when conducting noise measurements. These requirements are defined in Regulations 19, 20, 22 and 23 and Schedule 4. Site noise measurements have satisfied these requirements, with the following detailed:

- Handheld noise measurements were completed on the site using a Type 1 Sound Level Meter, Rion NL52 (s/n: 00297846).
- Continuous noise logging was completed near the site using a Type 2 BSWA noise logger (s/n: 560520)
- Both sound level meters hold current laboratory certificate of calibration, available upon request;
- They were calibrated before and after the measurements and was found to be within 0.1dB of the reference signal;
- Both meters record slow and fast time weighted sound levels, allowing relevant data to be collected;
- The microphones were fitted with a standard wind screen;
- During the measurements, the microphone was at least 1.3 metres above the ground level and at least 3 metres from reflecting facades (other than the ground plane); as such no adjustments have been applied for reflected noise.

Hand held noise measurements were taken at the tennis club on 21st July 2023, while noise logging was completed over a 4-day period commencing Friday 21st July 2023. Average meteorological conditions at the time, recorded at the Bureau of Meteorology's Perth site, were:

- Temperature: 4.4°C to 21.6°C
- Relative Humidity: 31 - 64%
- Note periods of rainfall have been disregarded in the measurement period

3.2 Continuous Ambient Noise Monitoring

The results of the noise logging are summarised in *Table 3.1.*

Table 3.1: Measured Average Noise Levels

Time of Day	Average Noise Level, dB (A)			
	L_{Aeq}	L_{A1}	L_{A10}	L_{A90}
Day (7am to 7pm)	50	57	51	40
Evening (7pm to 10pm)	49	51	44	37
Sunday (9am to 10pm)	51	57	53	46
Night (10pm to 7am)	44	46	42	39

4 Onsite Noise Level Measurements

4.1 Tennis Court Noise

In addition to the noise logging, individual measurements were taken of a number of tennis matches on the synthetic grass courts, namely Courts 11 and 12, along with the hard courts, namely Courts 13 and 14. The average results of the individual measurements are presented in Table 4.1.

Table 4.1: Handheld Noise Level Measurements from Tennis Courts

Noise source	Distance (to nearest point), m	Appropriate parameter	Measured Noise Levels, dB (A)
Shoe Squeaks	1.5m	L_{Amax}	78
Athlete groaning	3m	L_{Amax}	68
Racquet hitting ball	3m	L_{A1}	64
General tennis coaching	3m	L_{A10}	55

Measurements were also taken using an unattended noise logger within close proximity to the courts over a weekend period to determine the different usage may have on the overall noise levels. *Table 4.2* presents the noise data measured during the court usage from Friday until Sunday afternoon within close proximity to the courts. The location was approximately 6m from the fence at Courts 11 and 12, and 45m to the closest fence at Courts 13 and 14.

Table 4.2: Measured Average Noise Levels during Tennis Club Operations on 21st to 23rd July 2023

Day	Recorded usage – including courts	Time of Day	Average Noise Level, dB (A)			
			L_{Amax}	L_{A1}	L_{A10}	L_{A90}
Friday	Social tennis Courts 11, 12, 13 & 14	2:30pm to 5:30pm	67	60	54	38
Saturday	Junior and senior coaching Courts 11, 12, 13 & 14	7am to 12pm	66	58	53	46
Saturday afternoon	Social tennis Courts 11, 12, 13 & 14	1:30pm to 5pm	69	60	55	45
Sunday	Social tennis – Courts 11, 12, 13 & 14	3pm to 5pm	64	57	52	46

The results in Table 4.2 show that there is very little variation in the noise emitted by the site under each of the different types of everyday activities.

4.2 Residential Measurements

Measurements were taken at a number of locations representative of the nearest noise sensitive receivers, in an attempt to measure the impact of the newly resurfaced courts onto the residential premises. Note that the measurement location was along the road frontage, thus approximately 10 – 15m from the houses. Site activities during the noise level measurements included athletes on Courts 11, 12, 13 and 14 under coaching and also socially competing. The measurement results are shown in *Table 4.2*.

Table 4.2: Measured Noise Levels at Residential Premises

Location	Duration	Noise Sources	Measured Noise Levels, dB (A)		
			L_{Amax}	L_{A1}	L_{A10}
39A The Strand (R4)	15 minutes	Noise from tennis not discernible above background – L_{Amax} from vehicles and birds	67	61	50
41 The Strand (R3)	15 minutes	Noise from tennis generally not discernible above background – L_{Amax} from vehicles and birds	66	63	48
23 The Strand (background only tennis club inaudible)	15 minutes	Vehicles, birds, general noise from residential properties	66	58	54

5 Noise Impact Assessment

5.1 Assessment of Synthetic Grass and Hard Courts General Tennis Activities

Table 5.1 presents the predicted L_{A10} noise levels from the general tennis activities, including matches, rallies and activities on the synthetic grass and hard courts based on the measurements taken within the tennis club surrounds. Calculations have been based on the actual measurements associated with the site and compares this to the Regulations for the daytime, Sunday and evening periods.

Table 5.1: Predicted L_{A10} Noise from Tennis Club

Location (ref *Figure 1.1*)	Predicted Noise Level, L_{A10}, dB(A)	Assigned Noise Level, Day dB(A)	Complies with Assigned Noise Level, Day	Assigned Noise Level, Evening/Sunday dB(A)	Complies with Assigned Noise Level, Evening/ Sunday
R1 45 The Strand	38	45	Yes	40	Yes
R2 43 The Strand	35	45	Yes	40	Yes
R3 41 The Strand	34	47	Yes	42	Yes
R4 39A The Strand	34	47	Yes	42	Yes
R5 39 The Strand	33	47	Yes	42	Yes
R6 37 The Strand	31	47	Yes	42	Yes

The predicted noise levels from general noise associated with the tennis courts complies with the daytime, evening and Sunday assigned noise levels.

5.2 Assessment of Short Duration Events

Table 5.2 presents the predicted noise levels associated with short duration events such as racquets hitting ball, ball bouncing on hard surface and shoe squeaks compares these to the Regulations. Onsite measurements and attempts to determine the presence or absence of intrusive characteristics at the neighbouring residential locations were made, and the results showed that tonality was not measurable from shoe squeaks on Courts 13 and 14. Similarly, the determination of impulsiveness requires the difference between L_{Apeak} and $L_{A\ slow\ max}$ to be 15dB when determined for a single representative event. Measurements of short duration events were taken at a location representative of the nearby residents. At this distance, the difference between L_{Apeak} and $L_{A\ slow\ max}$ was less than 15 dB for individual short duration events.

Table 5.2: Noise from Short Duration Events

Location (ref *Figure 1.1*)	Predicted Noise Level, L_{Amax}, dB(A)	Assigned Noise Level, L_{Amax} Day & Sunday dB(A)	Complies with Assigned Noise Level, Day & Sunday	Assigned Noise Level, L_{Amax} Evening dB(A)	Assigned Noise Level, L_{Amax} Evening dB(A)
Shoe Squeaks					
R1 45 The Strand	43	65	Yes	55	Yes
R2 43 The Strand	44	65	Yes	55	Yes
R3 41 The Strand	44	67	Yes	57	Yes
R4 39A The Strand	45	67	Yes	57	Yes
R5 39 The Strand	45	67	Yes	57	Yes
R6 37 The Strand	45	67	Yes	57	Yes
Racquet Hitting Ball/Ball Bouncing on Surface					
R1 45 The Strand	51	65	Yes	55	Yes
R2 43 The Strand	52	65	Yes	55	Yes
R3 41 The Strand	50	67	Yes	57	Yes
R4 39A The Strand	51	67	Yes	57	Yes
R5 39 The Strand	50	67	Yes	57	Yes
R6 37 The Strand	49	67	Yes	57	Yes

The results presented in *Table 5.2* show that the predicted noise levels based on the measured noise levels complies with the assigned noise levels during the daytime evening and Sunday periods.

6 Conclusion

The results of the noise predictions show that the proposed changes to the Tennis Court site can comply with the assigned noise levels associated with the *Environmental Protection (Noise) Regulations 1997* at nearby residential receivers.

Appendix A

Terminology

Terminology

Ambient Noise

Ambient noise refers to the level of noise from all sources, including background noise as well as the source of interest.

A-Weighting

An A-weighted noise level is a noise level that has been filtered as to represent the way in which the human ear distinguishes sound. This weighting indicates the human ear is more sensitive to higher frequencies than lower frequencies. The A-weighted sound level is described as L_A dB.

Background Noise

Background noise is the noise level from sources other than the source of interest. Background may originate from such things as traffic noise, wind induced noise, industrial noise etc.

Decibel (dB)

The decibel is the unit that characterises the sound power levels and sound pressure of a noise source. It is a logarithmic scale with regard to the threshold of hearing.

Impulsive Noise

An impulsive noise source is a short-term impact noise which may originate from such things as banging, clunking or explosive sound.

Influencing factor

$=1/10\ (\%\ \text{Type}\ A_{100} + \%\ \text{Type}\ A_{450}) + 1/20(\%\ \text{Type}\ B_{100} + \%\ \text{Type}\ B_{450})$

Where:

% Type A_{100} = The percentage of industrial land within a 100m radius of the premises receiving noise

% Type A_{450} = The percentage of industrial land within a 450m radius of the premises receiving noise

% Type B_{100} = The percentage of commercial land within a 100m radius of the premises receiving noise

% Type B_{450} = The percentage of commercial land within a 450m radius of the premises receiving noise

+ Traffic factor (maximum 6 dB)

= 2 for each secondary road within 100m

= 2 for each major road within 450m

= 6 for each major road within 450m

L_{A1}

An L_{A1} level is the A-weighted noise level which is overreached for one percent of a measurement period. It represents the average of the maximum noise levels measured.

L_{A1} assigned level

An assigned L_{A1} level which is not to be exceeded for more than 1% of a delegated assessment period.

L_{A10} assigned level

An assigned L_{A10} level which is not to be exceeded for more than 10% of a delegated assessment period.

L_{A10}

An L_{A10} level is the A-weighted noise level which is exceeded for 10 percent of the measurement period and is considered to represent the "*intrusive*" noise level.

L_{A90}

An L_{A90} level is the A-weighted noise level which is overreached for 90 percent of the measurement period. It is represents the "*background*" noise level.

L_{Aeq}

L_{Aeq} refers to the comparable steady state of an A-weighted sound which, over a specified time period, contains the same acoustic energy as the time-varying level during the specified time period. It represents the "*average*" noise level.

L_{AFast}

The noise level in decibels, obtained using the A frequency weighting and the F time weighting as specified in AS1259.1-1990. L_{AFast} is used when examining the presence of modulation.

L_{Amax}

The L_{AMax} level is the maximum A-weighted noise level throughout a specified measurement.

L_{Amax} assigned level

The L_{Amax} assigned level describes a level which is not to be exceeded at any time.

L_{APeak}

The L_{APeak} level is the maximum reading (measured in decibels) during a measurement period, using the A frequency weighting and P time weighting AS1259.1-1990.

L_{ASlow}

A L_{ASlow} level is the noise level (measured in decibels) obtained using the A frequency weighting and S time weighting as specified in AS1259.1-1990

Major Road

A Major road has an estimated average daily traffic count of more than 15,000 vehicles.

Maximum Design Sound Level

Maximum Design Sound Level is the level of noise beyond hearing range of most people occupying the space start, become dissatisfied with the level of noise.

Modulating Noise

A modulating source is an audible, cyclic and regular source. It is present for at least 10% of a measurement period. The quantitative definition of tonality is:

a fluctuation in the discharge of noise which;

a) is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;

b) is present for at least 10% of the representative

One-Third-Octave Band

One-Third-Octave-Band are frequencies that span one-third of an octave which have a centre frequency between 25 Hz and 20 000 Hz inclusive.

Representative Assessment Period

Representative Assessment Period describes a period of time not less than 15 minutes, and not surpassing four hours. It is determined by an inspector or authorised person to be suitable for the assessment of noise emissions.

Reverberation Time

Reverberation time refers to an enclosure for a sound of a specified frequency or frequency band as well as the time that would be necessary for the reverberantly decaying sound pressure level in the enclosure to decrease by 60 decibels.

RMS

The root mean square level is used to represent the average level of a wave form such as vibration.

Satisfactory Design Sound Level

Satisfactory Design Sound Level refers to the level of noise that has been found to be acceptable for the environment in question, which is also to be non-intrusive.

Secondary / Minor Road

A Secondary / Minor road has an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

Sound Pressure Level (L_p)

Sound Pressure Level refers to a noise source which is dependent upon surroundings, and is influenced by meteorological conditions, topography, ground absorption; distance etc. Sound Pressure Level is what the human ear actually hears. Noise modelling predicts the sound pressure level from the sound power levels whilst taking into account the effect of relevant factors (meteorological conditions, topography, ground absorption; distance etc).

Sound Power Level (L_w)

A sound power level of a noise source cannot be directly measured using a sound level meter. It is calculated based on measured sound pressure levels at recognised distances. Noise modelling includes source sound power levels as part of the input data.

Specific Noise

Specific Noise relates to the component of the ambient noise of interest. It can be specified as the noise of interest or the noise of concern.

Tonal Noise

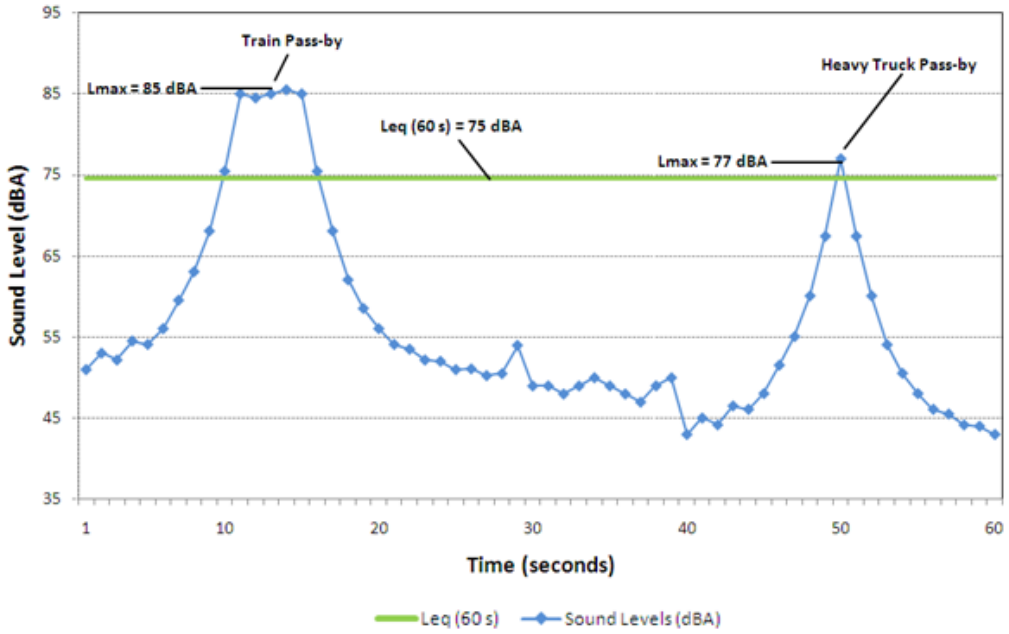
A tonal noise source can be designated as a source that has a specific noise emission over one or several frequencies, such as droning. The quantitative definition of tonality is:

the presence in the noise emission of tonal characteristics where the difference between —

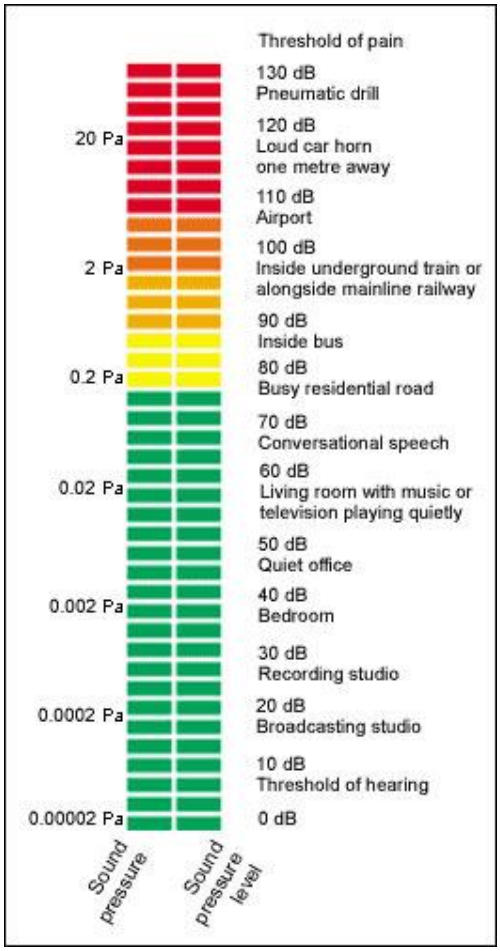
a) the A-weighted sound pressure level in any one-third octave band; and

b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands, is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Chart of Noise Level Descriptors



Typical Noise Levels



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To: Applecross Tennis Club

From: Rebecca Ireland

Attention: Paul Logothetis

Date: 21 March 2024

Email: [redacted]

Pages: 2

Reference: 23061206-02

Re: Applecross Tennis Club, Response to DWER Request for Additional Information

Dear Paul,

We refer to the email from Department of Water and Environment Regulation (DWER) and the attached review of our noise impact assessment completed for the Applecross Tennis Club (our ref: 23061206-01 dated 7th December 2023). This letter provides a response to the queries contained within the review.

Additional Noise Monitoring

To provide DWER with additional information for the review process, EcoAcoustics has completed additional noise monitoring and noise logging at the site and nearby residential premises. The results are presented below.

Noise Logging

Noise logging was conducted during the evening to determine the noise levels at the nearby residential premises. The resultant noise levels are summarised in Table 1.

Table 1: Summary of Measured Noise Levels

Location	Average Noise Level between 7pm and 10pm, dB(A)		
	L_{A01}	L_{A10}	L_{A90}
39The Strand	51	48	39

Monitoring of Noise Sources

In addition to the noise logging, handheld measurements were taken at 2 locations simultaneously to measure the actual noise from the four courts. Measurements were taken at close proximity to men playing on the courts, while additional handheld measurements were taken at the boundary of the closest residential premises to the courts in use. Both measurement locations were manned by staff, with the staff noting down actual audible sounds during the testing along with resultant noise levels from the sources, including shoe squeaks, racquets hitting balls and coaching.

Measurements were taken over about a 60-minute period, to allow for the removal of extraneous noise as a result of traffic, birds, dogs, people in the community taking and walking dogs etc. measurements were taken with sound level meters, (Type 2 Norsonic Nor 131 and Type 1 Rion NL52) both calibrated before and after the measurements and found to be within 0.2 of the reference signal. Measurements were taken in free field situations, at least 2m from any reflecting facades (other than the ground plane).

The measured noise levels are presented in Table 2 & 3.

Table 2: Noise Measurements from Shoes Squeaking

Noise Source	Applecross Tennis Club (approximately 2m – 3m from source) dB(A)	Adjacent to Boundary of 41 The Strand, approximately 53m to source) (as noise occurred without extraneous noise), dB(A)	With a penalty adjustment of +10dB(A)
Shoe Squeaking Courts 13 & 14 only	66	44	54
	68	46	56
	76	47	57
	74	45	55

Table 3: Noise Measurements from Racquets Hitting Balls

Noise Source	Applecross Tennis Club (approximately 5m – 15m from source) dB(A)	Adjacent to Boundary of 43 The Strand, approximately 33m to source) (as noise occurred measured without extraneous noise), dB(A)
Racquet Hitting Balls Courts 11 & 12 – worst case location	52	40
	50	38
	53	40
	55	42

Comparing these results to the measured ambient noise during the evening, it can be seen that the predicted noise levels associated with the racquet hitting balls on the court are well below the existing L_{A10} levels, and similar to the L_{A90} background levels, which would result in the sound not discernible above the ambient noise. Thus, the addition of a penalty adjustment is not applicable.

Similarly, the shoe squeak noise levels are similar to the measured evening noise levels, however, to provide a worst case scenario, based on the worst case measurements, Table 1 shows the inclusion of a penalty adjustment of +10dB for impulsiveness. This shows compliance with the assigned noise levels at the closest boundary. It follows that the house is located further from the boundary, thus noise levels will be lower.

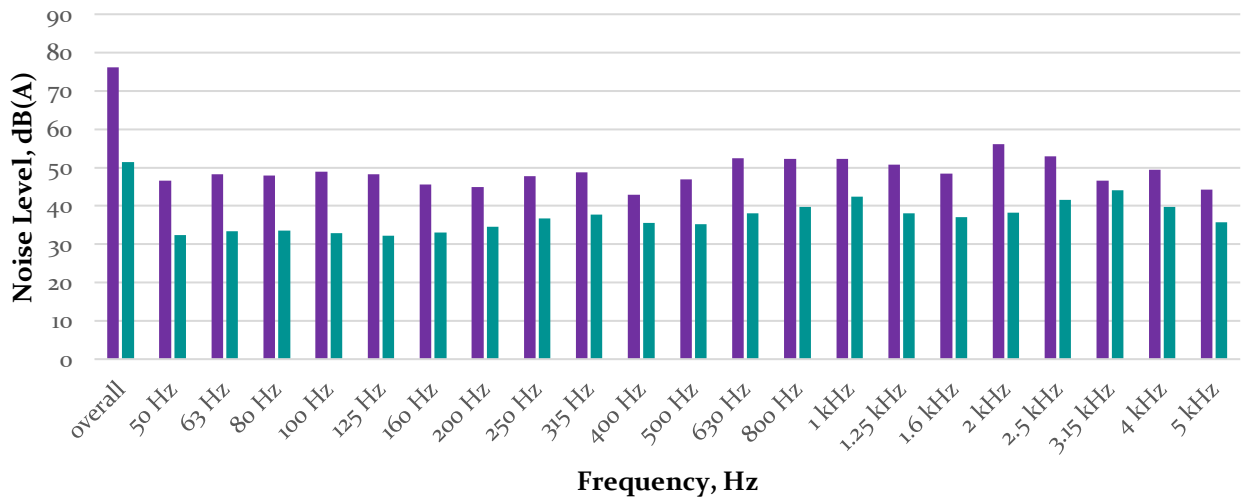
It is important to note that these measurements were taken during men's tennis matches within the Courts. During normal sessions in the afternoons and evenings, children, teens and adults use the sites, thus it is likely that noise levels associated with children and teens playing will be lower than the measured men's match.

Similarly, the shoe squeaks were measured from a player with synthetic court shoes on – chosen for the loudest noise measurements. The other player had hard court shoes and his shoes did not squeak at all. In general, from discussions with the Tennis Club, those players using the hard courts would generally use hard court shoes as these are less likely to damage the surface of the courts. It is important to note that during the site visit, shoe squeaking on the hard courts was observed only twice during normal use of the courts. The measurements from shoes squeaking based on an exaggerated simulation.

1/3 Octave Band Measurements

In addition to the overall measurements, 1/3 octave band spectra data was also measured during the close-up measurements of the shoe squeaks and racquets hitting the balls. The results of the maximum measured noise levels are presented in Chart 1.

Chart 1: Measured Shoe Squeak (3m) & Measured Racquet Hitting Ball (5-15m)
1/3 Octave Band Meausurements, dB(A)



We trust the above is acceptable. Should you require further information please do not hesitate to contact us.

Regards,

Rebecca Ireland

Managing Director